科创教育

MG科创空间和产品介绍

MG STEAM Makerspace & Product Introduction

解锁科技创造力

Unlock Technological Creativity

MG提供科创教育设备、课程套材以及教学方案，支持学校、机构布置教学空间与开展科创课程。

设备与产品分为力与运动、机械运转、百变光影、工程建构、智能智造、电子启蒙等系列。课程分为主题课与营队课。

一起解锁科技创造力！

MG provides science and innovation educational equipment, curriculum kits, and teaching solutions to support schools and institutions in setting up teaching spaces and delivering STEM courses. The equipment and products are divided into series such as **Force and Motion**, **How-Machines-Work**, **Protean Light and Shadow**, **Electronics and Circuits**, **Engineering Construction**, and **Intelligent Manufacturing**. The courses are categorized into thematic courses and engineering camp with project-based courses.

Let's unlock the power of technological creativity !

LINK

扫码观看项目示意

解锁科技创造力

Unlock Technological Creativity

练习与试错

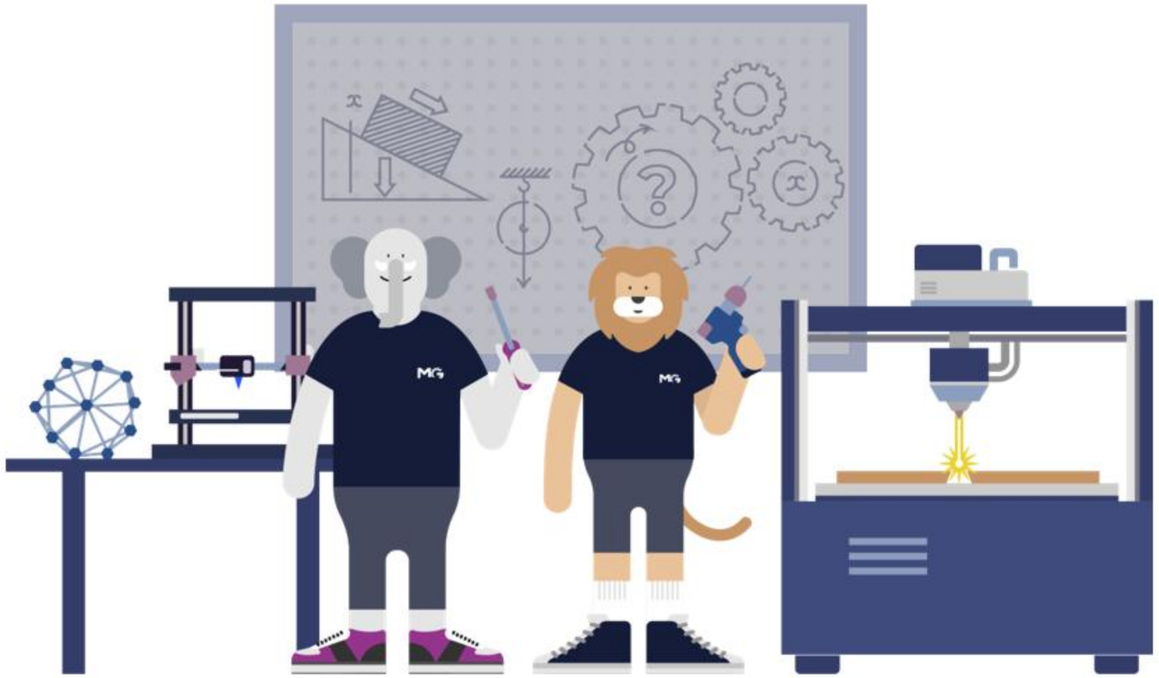
Tinkering

有目的地设计与制造

Making

开始工程设计

Engineering



跨学科创客空间
STEAM MAKERSPACE

空间布置
Space Layout

课程导入
Makerspace Courses

教学材料
Educational Materials

科创教育

科学
Science

力
Force

运动
Motion

重力
Gravity

动量
Momentum

能量
Energy

因果关系
Causality

技术
Technology

工具使用
Tool Usage

ICT应用
ICT Applications

机械结构
Mechanical Structures

发明创造
Invention and Innovation

低科技创意
Low-Tech Creativity

工程
Engineering

工程设计过程
Engineering Design Process

系统思考
Systematic Thinking

问题解决
Problem Solving

结构与稳定性
Structure and Stability

材料性能
Material Properties

艺术
Art

视觉艺术
Visual Arts

戏剧
Drama

创意表达
Creative Expression

人文
Humanities

数学
Math

测量
Measurement

计数
Counting

空间关系
Spatial Relationships

几何形状
Geometric Shapes

数概念
Number Concepts

运算
Operations

数据收集
Data Collection

逻辑数理概念
Logical Mathematical Concepts

210平空间落位及说明

210㎡ Space Layout and Description

工程建构套件

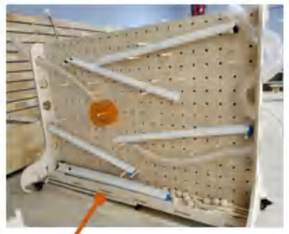
-车辆、建筑等结构拼接

-低结构材料完成工程设计

 # Engineering Construction Kit

-Assemble vehicles, buildings, and diverse structures

-Achieve engineering designs with low-structured materials



工程建构墙面

-磁铁互动+洞洞互动

-磁力洞洞板开放探究

 # Force and Motion – Unpowered Car

-Exploring phenomena of force and motion

-Complete engineering design with low-structure materials

力与运动–无动力飞车轨道

-探究力与运动现象

-低结构材料完成工程设计

 # Force and Motion – Unpowered Car

-Exploring phenomena of force and motion

-Complete engineering design with low-structure materials

工程建构操作站

-工程建构主题展陈

-带轮可移动

 # Engineering Construction Operation Station

-Engineering construction themed display

-Easy to move with wheels

电子电路操作站

-电子电路主题展陈

-带轮可移动

 # Electronic and Circuit Operation Station

- Electronic and circuit themed display
- Easy to move with wheels

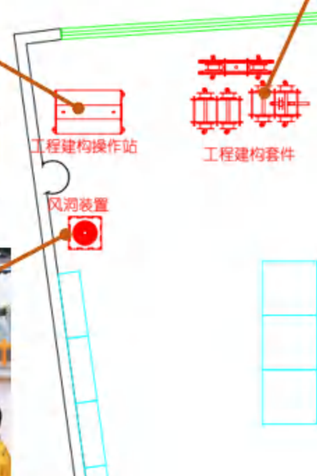
机械运转操作站

-机械运转主题展陈

-带轮可移动

 # How-Machines-Work Operation Station

- How-machines-work themed display
- Easy to move with wheels



力与运动 - 风洞装置

-空气动力学启蒙

-低结构材料完成工程设计

#-Force and Motion - Wind Tunnel

- Introduction to aerodynamics
- Complete engineering design with low-structure materials

机械互动板 – 配洞洞板

-展示常见机械原理

-配置机械类的课程方案

 # Mechanical Interactive Board – Compatible with Pegboard

- Showcasing common mechanisms
- Equipped with mechanical course programs

百变光影操作站

*** 带轮可移动**

-探究色光的三原色

-进行光影创作与实验

-利用灯光绘画

 # Protean Light and Shadow Workstation

*** Easy to move with wheels**

-Exploring the RGB light colors

-Creating and experimenting with light and shadow

-Painting with light

灯光涂鸦板

-利用灯光绘画

 # Light Drawing Board

-Painting with light

3D打印工作站

-智能智造

-支持开放造物，支持造“玩具”

 # 3D Print Workstation

- Smart manufacturing
- Support open creation, support making "toys"

150平空间落位及说明

150㎡ Space Layout and Description

 # 力与运动 - 风洞装置

-空气动力学启蒙

-低结构材料完成工程设计

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-利用灯光绘画

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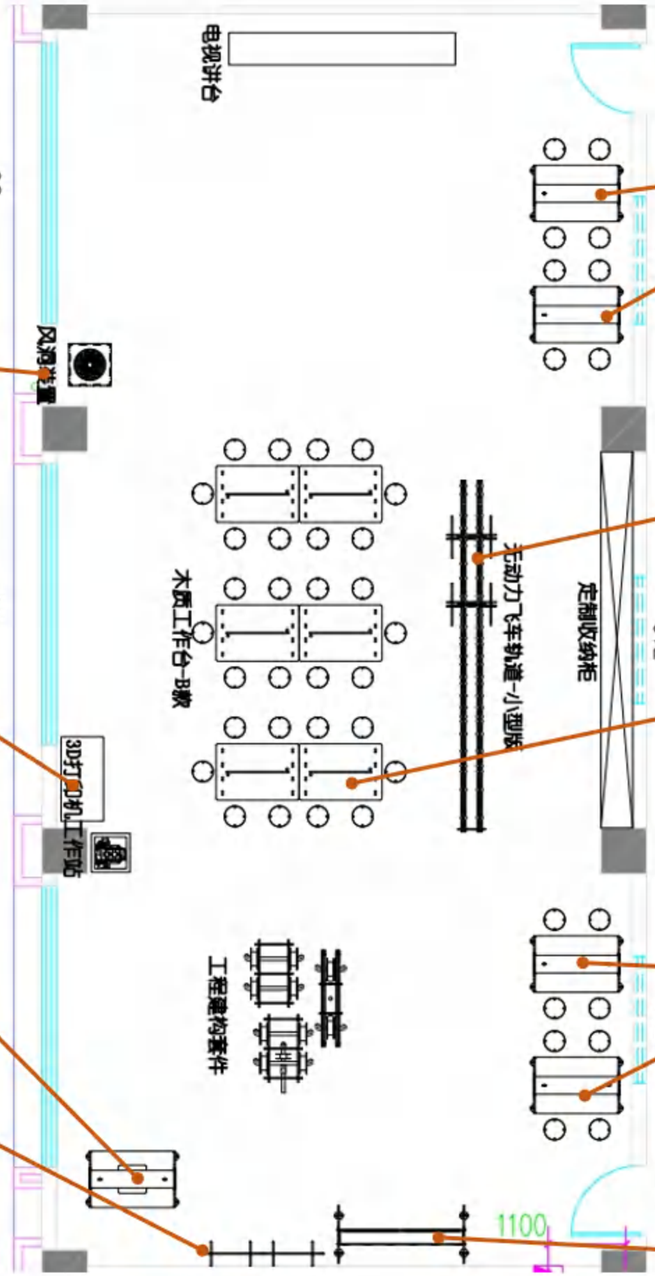
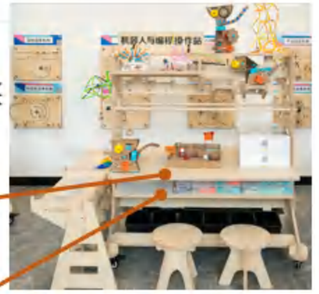




 # 电子电路操作站

-电子电路主题展陈

-带轮可移动

 # Electronic and Circuit Operation Station

- Electronic and circuit themed display
- Easy to move with wheels

 # 机器人操作站

-机器人主题展陈

-带轮可移动

 # Robot Operation Station

- Robot themed display
- Easy to move with wheels

 # 力与运动–无动力飞车轨道

-探究力与运动现象

-低结构材料完成工程设计

 # Force and Motion – Unpowered Car

- Exploring phenomena of force and motion
- Complete engineering design with low-structure materials

 # 木质工作台

-能够拼接使用

-可搭配洞洞板

 # Wooden Workbench

- Can be interconnected
- Compatible with pegboard boards

 # 工程建构操作站

-工程建构主题展陈

-带轮可移动

 # Engineering Construction Operation Station

- Engineering construction themed display
- Easy to move with wheels

 # 机械运转操作站

-机械运转主题展陈

-带轮可移动

 # How-Machines-Work Operation Station

- How-machines-work themed display
- Easy to move with wheels

 # 机械互动板 – 配洞洞板

-展示常见机械原理

-配置机械类的课程方案

 # Mechanical Interactive Board – Compatible with Pegboard

- Showcasing common mechanisms
- Equipped with mechanical course programs

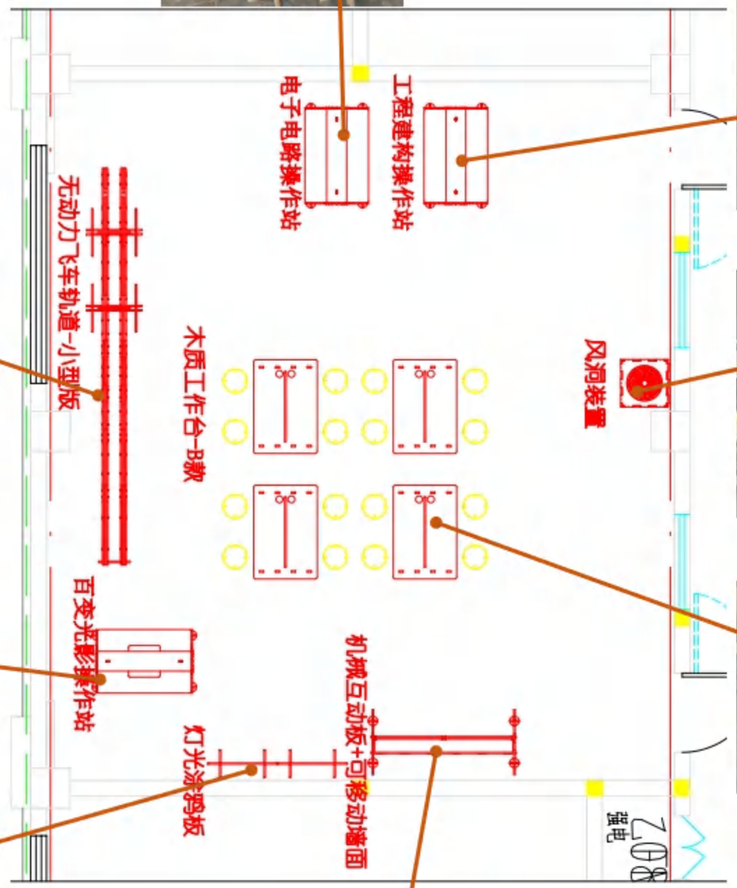
80平空间落位及说明
80㎡ Space Layout and Description

 # 电子电路操作站
-电子电路主题展陈
-带轮可移动

 # Electronic and Circuit Operation Station
-Electronic and circuit themed display
-Easy to move with wheels

 # 工程建构操作站
-工程建构主题展陈
-带轮可移动

 # Engineering Construction Operation Station
-Engineering construction themed display
-Easy to move with wheels

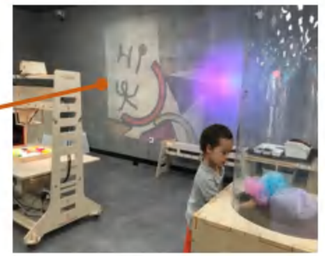


 # 力与运动–无动力飞车轨道
-探究力与运动现象
-低结构材料完成工程设计

 # Force and Motion – Unpowered Car
-Exploring phenomena of force and motion
-Complete engineering design with
low-structure materials

 # 力与运动 - 风洞装置
-空气动力学启蒙
-低结构材料完成工程设计

 # Force and Motion - Wind Tunnel Project
-Introduction to aerodynamics
-Complete engineering design with
-low-structure materials



 # 百变光影操作站
*** 带轮可移动**
-探究色光的三原色
-进行光影创作与实验

 # Protean Light and Shadow Workstation
*** Easy to move with wheels**
-Exploring the three primary colors of light
-Creating and experimenting with light and shadow

 # 木质工作台
-能够拼接使用
-可搭配洞洞板

 # Wooden Workbench
-Can be interconnected
-Compatible with pegboards

 # 灯光涂鸦板
-利用灯光绘画

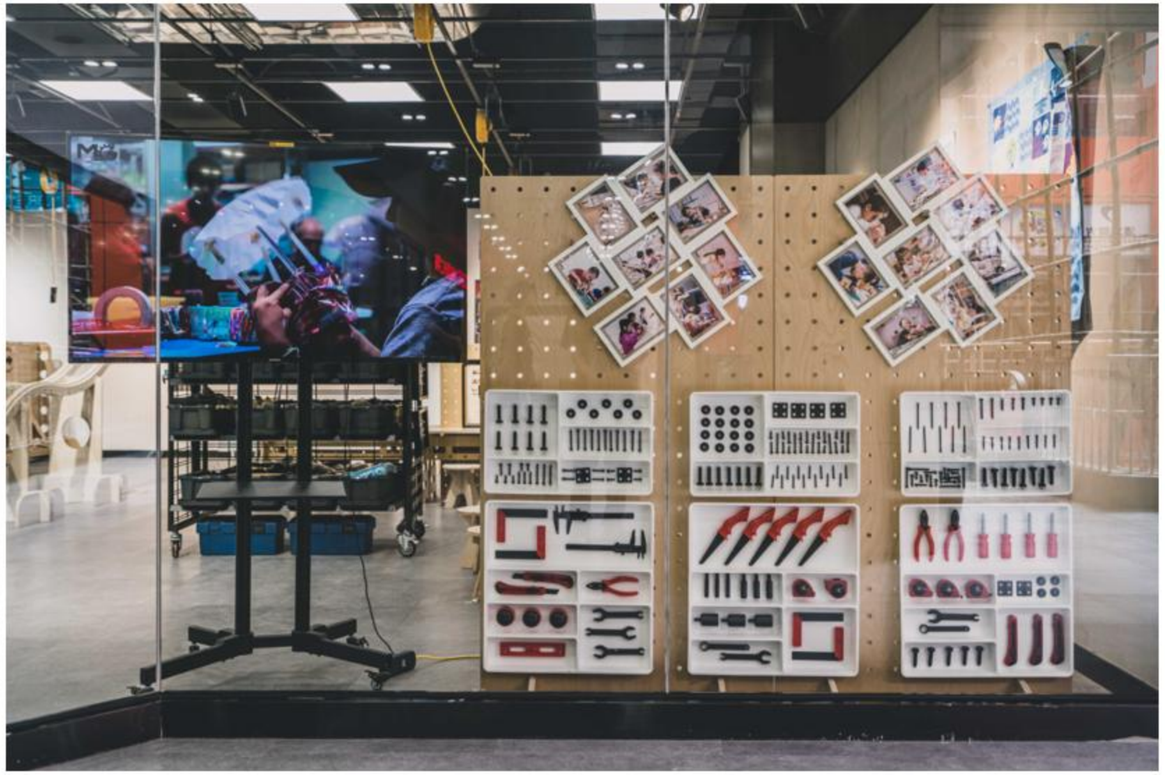
 # Light Drawing Board
-Painting with light

 # 机械互动板 – 搭配可移动洞洞板
-展示常见机械原理
-配置机械类的课程方案

 # Mechanical Interactive Board – Compatible with Pegboard
- Showcasing common mechanisms
- Equipped with mechanical course programs

幼儿园科创教室01

Kindergarten Science and Innovation Classroom Case1



幼儿园科创教室02
Kindergarten Science and Innovation Classroom Case1

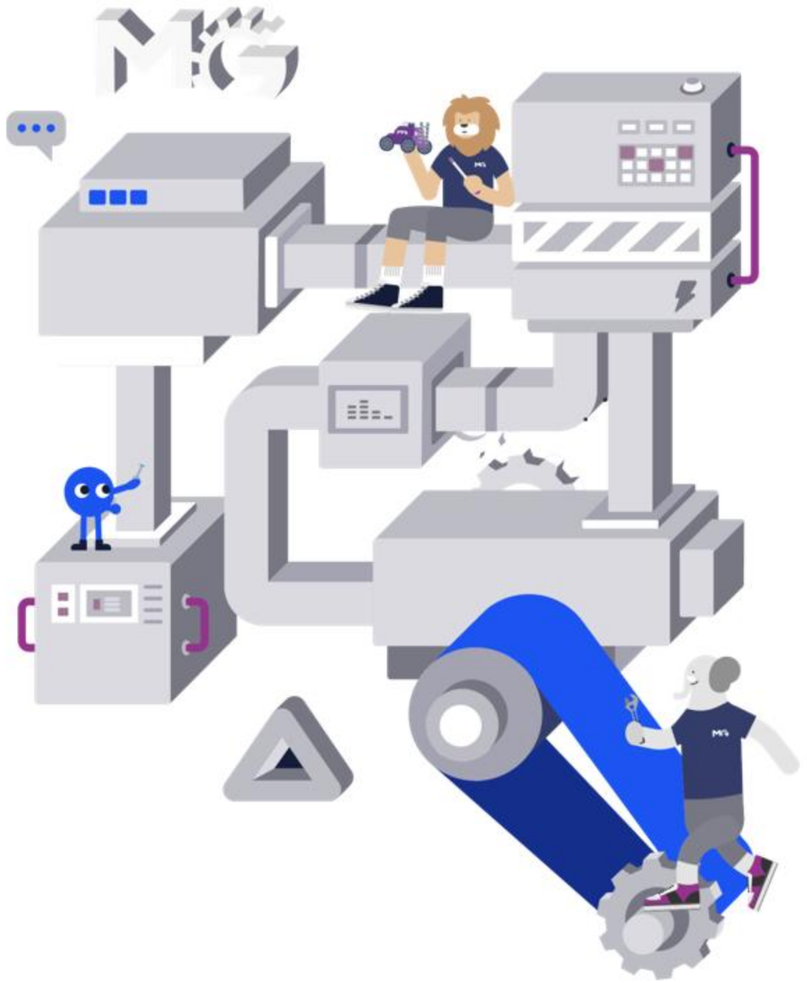
小学科创空间01
Primary School Science and Innovation Space Case1

小学科创空间02
Primary School Science and Innovation Space Case1

小学科创空间03
Primary School Science and Innovation Space Case1

小学科创空间04

Primary School Science and Innovation Space Case1



主题操作站
MAKERSPACE WORKSTATIONS

力与运动
Force and Motion

机械运转
How-Machines-Work

百变光影
Dynamic Light and Shadow

电子电路
Electronic and Circuit

工程建构
Engineering Construction

智能智造
Intelligent Manufacturing

环创家具
Makerspace Furniture

主题一
力与运动

Theme 1
Force and Motion

高度开放 Highly Open-ended

幼儿园 Kingdergarten

小学 Primary School

初中 Junior High School

科创教育

无动力飞车
Unpowered Car

强开放性 Highly Open-ended　小车比赛 Car Racing

无动力飞车是一个开放性极强的创客项目，孩子们利用丰富的低结构材料设计无动力小车，在有不同坡度的木制轨道上进行小车比赛。

The Unpowed Car is a highly open-ended maker project. Children design power-free cars use a variety of low-structure materials and race on wooden tracks with different slopes.

标准版：7.5米*0.7米*2米（长宽高）
小型版：5米*0.6米*1米（长宽高）
跳跃版：3米*0.7米*2米（长宽高）

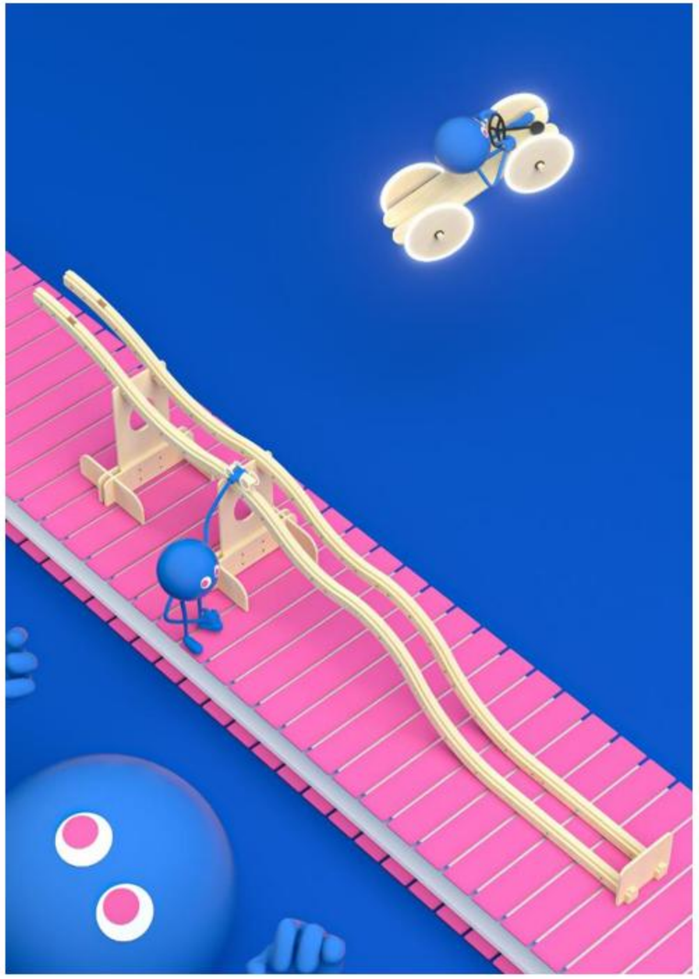
Standard Version: 7.5m x 0.7m x 2m (length x width x height)
Small Version: 5m x 0.6m x 1m (length x width x height)
Jumping Version: 3m x 0.7m x 2m (length x width x height)

video
扫码观看项目示意

幼儿园 Kingdergarten　小学 Primary School　初中 Junior High School

主题一：力与运动

Theme 1: Force and Motion



标准版轨道：

Standard Version Track：

7.5m*0.7m*2m（长宽高）

7.5m*0.7m*2m (length x width x height)

跳跃版轨道：

Jumping Verison Track:

3m*0.7m*2m（长宽高）

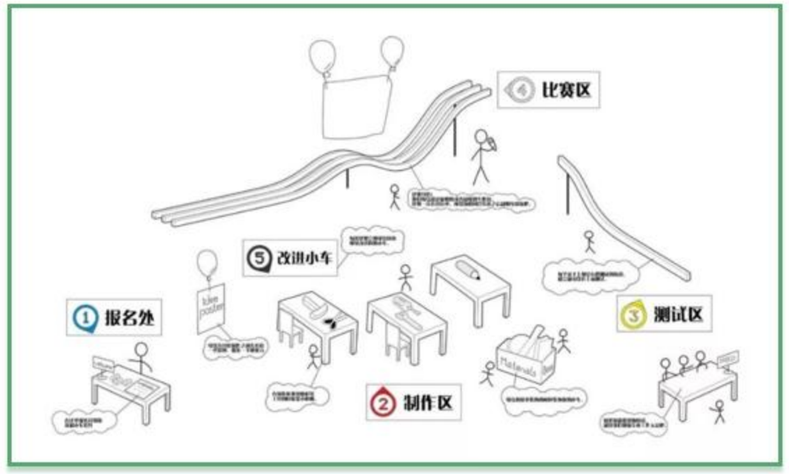
7.5m*0.7m*2m (length x width x height)

小型版轨道：

Small Version Track:

5m*0.6m*1m（长宽高）

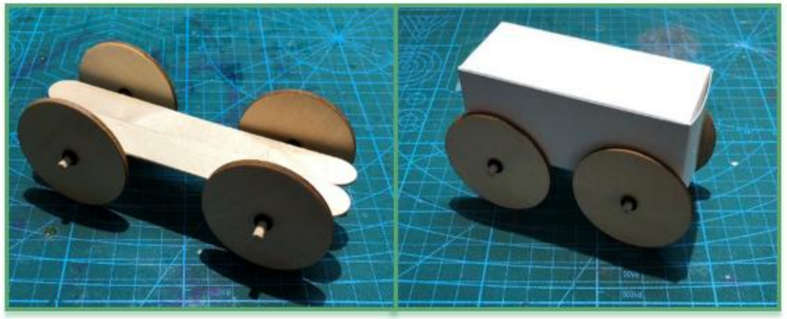
5m*0.6m*1m ((length x width x height)



无动力飞车项目布置
Layout for Unpowered Car Project

无动力飞车测试轨道
Testing Track for Unpowered Car

无动力飞车模型轨道
Model Track for Unpowered Car



无动力小车标准套件
Unpowered Car Standard Accessories

video

扫码观看制作示意

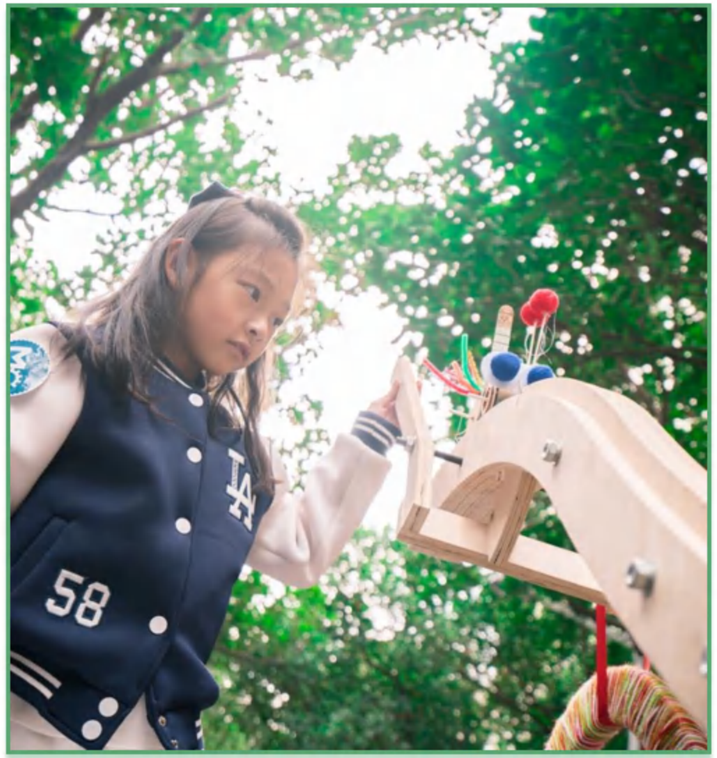
无动力小车装饰材料示意
*开放低结构材料或者环保回收材料

Decorative Material Example for Unpowered Car
*Open-ended low-structure materials or eco-friendly recycled materials

无动力小车作品示意
Unpowered Car Examples

主题一：力与运动

Theme 1: Force and Motion



video

扫码观看活动示意

培养孩子的工程思维

Cultivating Children's Engineering Thinking

工程师在寻求某个问题的最佳解决方案时，会遵循一系列步骤，这个过程叫做工程思维法，具体包括：明确定义问题、头脑风暴、选择最佳策略、设计、建造、测试、修改及分享成果。在无动力小车项目中，孩子们会反复经历设计、建造、测试、修改与分享成果的流程，自然地训练工程设计思维、训练解决问题的能力。**在“失败”中学习，在“成功”中建立创造力自信心。**

When engineers seek the best solution to a problem, they follow a series of steps known as the engineering design process. This process includes: clearly defining the problem, brainstorming, selecting the best strategy, designing, building, testing, modifying, and sharing results. In the unpower car project, children will repeatedly experience the process of designing, building, testing, modifying, and sharing results, naturally training their engineering design thinking and problem-solving abilities. **They learn from “failure” and build confidence in creativity through “success”.**

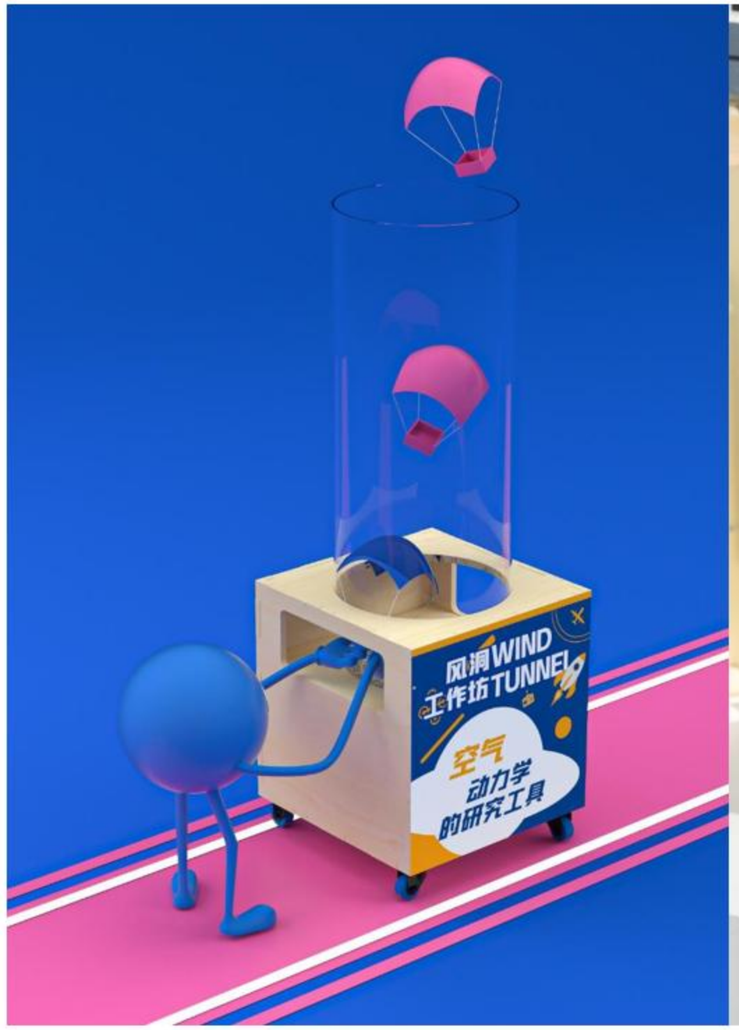

科创教育








科创教育



风洞装置
Wind Tunnel Equipment

空气动力学 Aerodynamic　飞行器 Aircraft

利用风洞，孩子们可以探索日常物品在气流中的运动状态，是孩子们空气动力学启蒙的第一步。在风洞中，纸杯、塑料袋、丝巾、纸张、吸管、乒乓球、泡沫等寻常材料都变成了供孩子探索的飞行装置。

By using a wind tunnel, children can explore the motion of everyday objects in airflow, marking the first step in their introduction to aerodynamics. In the wind tunnel, common materials such as paper cups, plastic bags, scarves, paper, straws, ping pong balls, and foam become aircrafts for children to explore.

规格： 0.6m*0.6m*1.82m

Specification: 0.6m x 0.6m x 1.82m

video

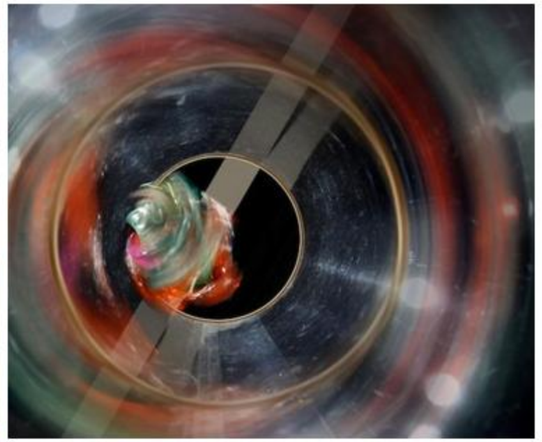
扫码观看项目示意

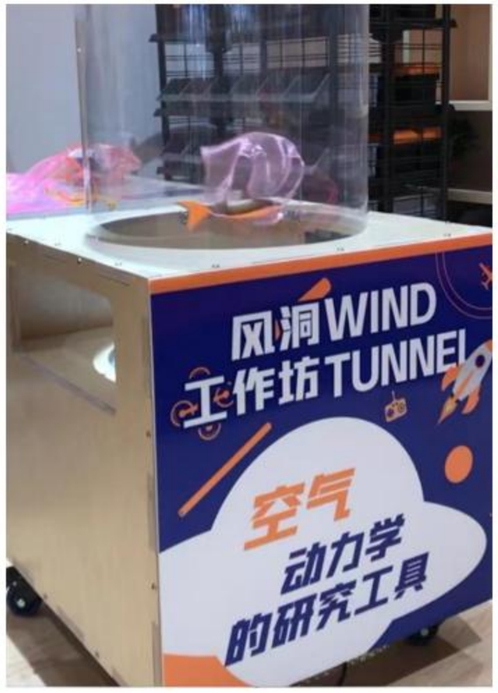
幼儿园 Kingdergarten　小学 Primary School

主题一：力与运动

Theme 1: Force and Motion

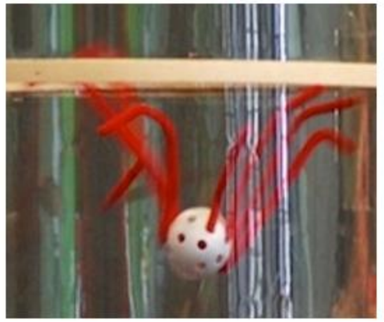












支持孩子获得空气动力学的直观体验

Supporting Children in Gaining Intuitive Experiences in Aerodynamics

在风洞项目中，根据观察到的现象，孩子们会自己确定飞行规则，再设计飞行器满足自定的规则，他们可能会做能飞到最高处的飞行器，也会尝试设计能够悬浮在风洞中的飞行器。

由于风阻、重力、对称性、湍流、升力等因素造成的现象会非常直观地场景化地印入孩子们的脑海，当孩子们在以后的学习中遇到这些概念时，早期积累的直观经验能够支持孩子们做更深入的理解和探究，比没有接触过的人学得快、学得深。

在风洞项目中，孩子们能够天然进行科学探究，研究变量对于结果的影响，例如飞行器的重量、形状、表面积等因素对于飞行状态的影响。

孩子是天生的“微创新”专家，很擅长模仿和改造，在风洞项目中，看到别人的作品产生的最直观的现象，能够迅速激发自己的灵感，开始再创作和再尝试。能够很好地锻炼孩子的创新与创造能力。

In the wind tunnel project, based on observed phenomena, children will determine their own flying rules and then design aircrafts that meet these self-defined rules. They might create devices that can fly the highest or attempt to design those that can hover within the wind tunnel.

The phenomena caused by factors such as air resistance, gravity, symmetry, turbulence, and lift will vividly impress themselves in the children's minds. When they encounter these concepts in their future studies, the intuitively accumulated early experiences will support them in achieving a deeper understanding and exploration, allowing them to learn faster and more thoroughly than those who have not had such exposure.

In the wind tunnel project, children naturally engage in scientific inquiry, studying how variables affect outcomes, such as the weight, shape, and surface area of aircrafts on their flight behavior.

Children are natural "micro-innovation" experts, skilled at imitation and modification. In the wind tunnel project, seeing the immediate effects of others' creations can quickly inspire their own ideas, leading to re-creation and experimentation. This effectively enhances their innovation and creativity skills.

科创教育

赛道组合
Track Set

斜面探究 Inclined Plane Exploration　赛道互动 Track Interactive Activity

赛道组合，支持在赛道上进行斜面探究、牙刷机器人、创意机器人等活动。

The track set supports activities such as inclined plane exploration, toothbrush robots, creative robots, and more on the track.

幼儿园 Kingdergarten　小学 Primary School

Link

扫码观看项目示意

科创教育

主题二

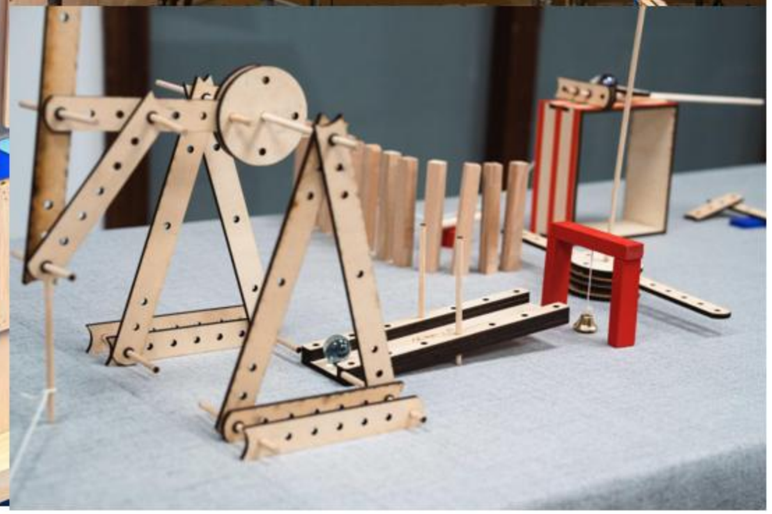
机械运转操作站

Theme 2

How-Machines-Work Operation Station

机械原理 Mechanical Principles

开放创作 Open Creation



幼儿园 Kingdergarten

小学 Primary School

科创教育

机械互动板组合
Mechanical Interactive Board Set

机械原理 Mechanical Principles　直观有趣 Intuitive and Interesting

机械互动装置把复杂难懂的机械原理用最直接的方式呈现，可直接进行互动操作。帮助孩子绕到习以为常的事物背后，了解日常物品的工作原理，洞悉机械运转的秘密。

The mechanical interactive device presents complex and difficult-to-understand mechanical principles directly, allowing for hands-on interaction. It helps children look beyond the familiar and understand the working of everyday objects, unveiling the secrets of how machines work.

标准版：每块480*340mm （长宽），共12块

小型版：每块290*174mm（长宽），共12块

Standard Version: 480 x 340mm (length x width) each piece, 12 pieces in total

Small Version: 290 x 174mm (length x width) each piece, 12 pieces in total

video

扫码观看原理示意

幼儿园 Kingdergarten

小学 Primary School

主题二：机械运转操作站

Theme 2: How-Machines-Work Operation Station

标准版 Standard Version
480*340mm/piece

小型版 Small Version
240*170mm/piece

行星轮机构
Planetary Gear Mechanism

内齿轮齿条机构
Rack and Mutilated Pinion

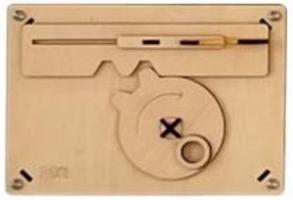
内外齿轮机构
Internal and External Gear Mechanism

牛头刨床机构
Bullhead Planer Mechanism

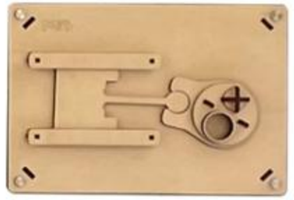
凸轮机构
Cam Mechanism

椭圆仪机构
Elliptical Trammer Mechanism

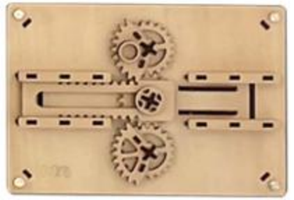
棘轮机构
Ratchet and Pawl



齿轮齿条机构
Rack and Pinion



偏心轮滑块机构
Cam-Slider Mechanism



外齿轮齿条机构
External Gear Rack Mechanism

叶片式光圈机构
Blade Diaphragm Mechanism

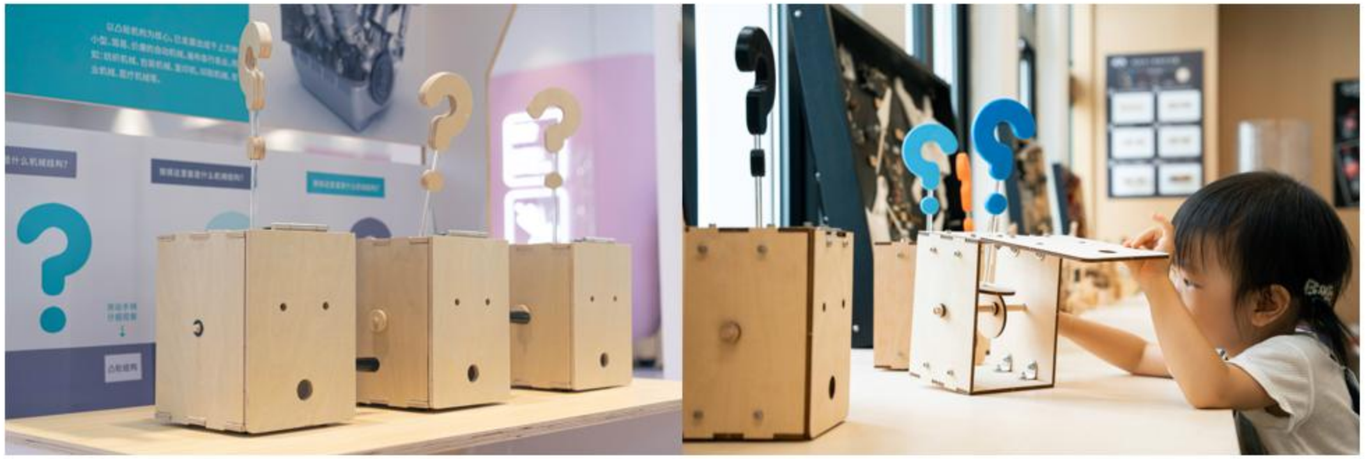
槽轮机构
Geneva Mechanism

主题二：机械运转操作站

Theme 2: How-Machines-Work Operation Station

科创教育

科创教育



问号盒子 原田和明
Question Mark Boxes Kazuaki Harada

环境布置 Enviroment Setup　机械运转 How Machines Work

外观相同的6个盒子有着各不相同的运动方式。 掀开盖子，转动手柄，观察机械零件间的精密配合，感受 简单与复杂的完美协调， 以更直接的方式探索机械运 转的秘密。

Six identical-looking boxes, each with a different mode of movement. Lift the lid, turn the handle, and observe the precise coordination between mechanical parts. Experience the perfect harmony of simplicity and complexity, exploring the secrets of mechanical operation in a more direct way.

单个规格： 250mmx200mmx450mm

Specification: 250mmx200mmx450mm(each)

幼儿园 Kingdergarten　小学 Primary School

Link

扫码观看项目示意

Inspired by 铃木完吾

机械运转（3D打印版）
How-Machines-Work Set (3D Printed Version)

机械运转 How Machines Work　3D探索 3D Exploration

机械运转套件把复杂难懂的机械原理用最直接的方式呈现，可直接进行互动操作。孩子们可以直接动手体验每一款机械的运转状态，了解日常物品的工作原理，洞悉机械运转的秘密。

The How-Machines-Work Set presents complex and difficult-to-understand mechanical principles in the most direct way, allowing for hands-on interaction. It helps children look beyond the familiar and understand the workings of everyday objects, unveiling the secrets of how machines work.

单块尺寸：200mm*200mm，共计12个

Single Piece Dimensions: 200mm*200mm, 12pieces in total

幼儿园 Kingdergarten　小学 Primary School

Link

扫码观看项目示意

科创教育

机械运转的秘密

The Secrets of How Machines Work

机械原理 Mechanical Priciples　9节课 9 Classes　12个项目 12 Projects

一起绕到习以为常的事物背后，阅读机械绘本，了解物品的工作原理，学习机械结构的发展史，洞悉机械运转的秘密，孩子们通过动手项目将学到斜面、杠杆、曲柄、轮轴、齿轮齿条、凸轮、棘轮、滑轮等经典机械结构及其生活应用。

*该套材可重复利用。

Children will explore beyond familiar objects, read mechanical storybooks, understand the working principles of items, learn about the history of mechanical structures, and uncover the secrets of how machines work. Through hands-on projects, children will learn about classic mechanical structures such as ramp, lever, crank, wheel axle, gear and rack, cam, ratchet, and pulley, as well as their applications in daily life.

*This set of materials can be reused.

Link

扫码观看项目示意

幼儿园 Kingdergarten　小学 Primary School

科创教育

凸轮自动装置
Cam Automatic Device

机械设计 Mechanical Design　凸轮 Cam

利用经典机械结构-凸轮完成自动装置设计，转动手柄，上方的从动件随之运动，参与者可以自行设计运动形象与场景。

*装饰材料需自行准备，建议多用环保回收材料。

Using the classic mechanical structure of a cam, design an automatic device. When turn the handle, the driven component above will move accordingly. Participants can design their own movement shapes and scenes.

*Decorative materials not included; it is recommended to use eco-friendly recycled materials.

幼儿园 Kingdergarten　小学 Primary School

Link

扫码观看工作坊详情

科创教育

戈德堡简单机械大挑战
Rube Goldberg Simple Machine Challenge

简单机械 Simple Machines　连锁反应 Chain Reaction

5个简单机械+1个终点装置 5 Simple Machines+1 Terminal Device

学习与制作斜面、螺旋、杠杆、轮轴、滑轮等简单机械，结合身边的开放性材料完成戈德堡机械（连锁反应装置）。可结合戈德堡终点装置一起完成探索。

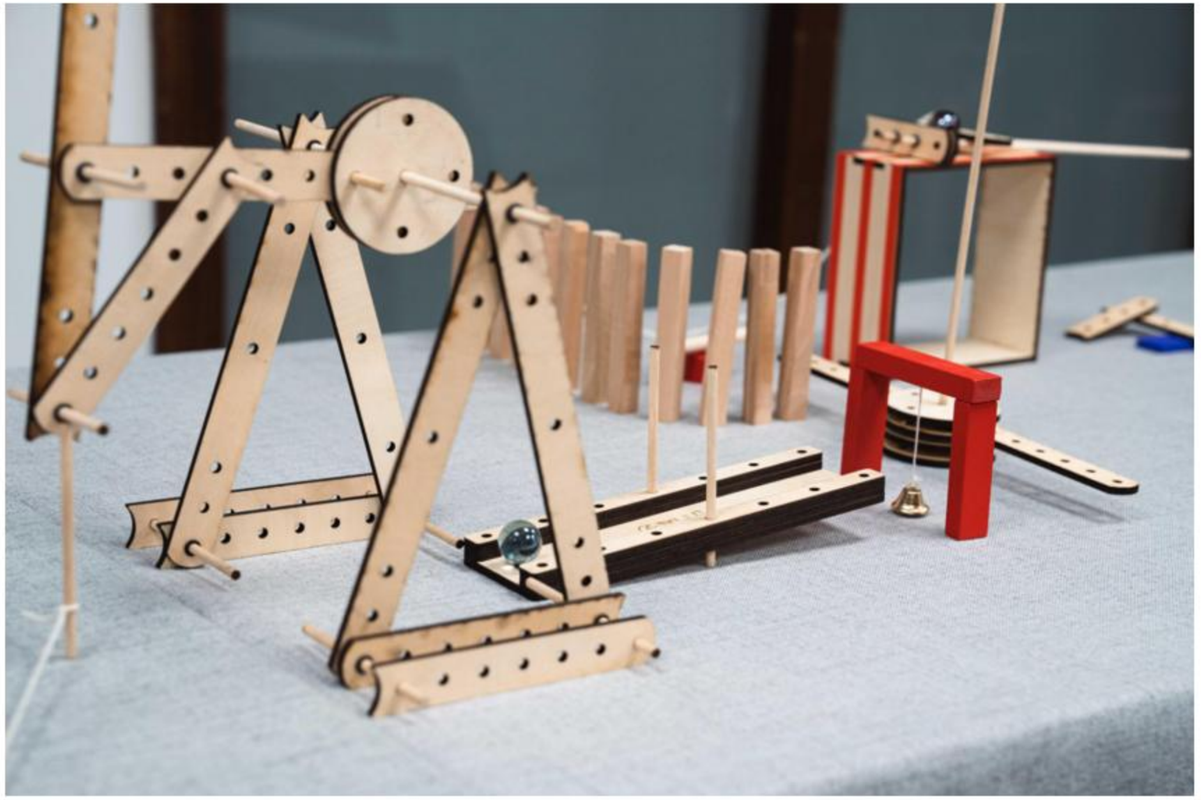
Learn and make simple machines such as ramp, screw, lever, wheel axle, and pulley, using open-ended materials from surroundings to build a rube goldberg machine (chain reaction device). This can be combined with the goldberg terminal device for exploration.

小学
Primary School

Link

扫码观看课程详情

科创教育



木质戈德堡联动装置套件

Wooden Rube Goldberg Chain Reaction Device Kit

简单机械 Simple Machines　联动装置 Chain Reaction

斜面、杠杆、滑轮等 Ramp,Lever,Pulley ect.

利用提供的木质结构与其他材料，完成戈德堡联动装置设计。仅使用套件即可完成装置，也可以加入其他开放材料共同使用。套件分为标准版与定制版，定制版更适合幼儿园阶段儿童使用。

Using the provided wooden structures and other materials, design a rube goldberg chain reaction device. The device can be completed using only the kit, but other open materials can also be incorporated. The kit is available in a standard version and a customized version, with the customized version being more suitable for kingdergarten children.

幼儿园 Kingdergarten　小学 Primary School

标准版视频 Video for standard version

定制版视频 Video for customized version

Link

科创教育

主题三

百变光影操作站

Theme 3
Protean Light and Shadow Operation Station

光影探索 Light and Shadow Exploration

光影故事场景 Light and Shadow Story Scene

幼儿园 Kingdergarten

小学 Primary School

科创教育

光影工作站
Light and Shadow Workstation

光影探索 Light and Shadow Exploration　多角度思维 Multi-perspective Thinking

光能改变颜色、创造影子、勾勒形状和轮廓，光影现象也颇具美感，对儿童有着天然的吸引力，鼓励孩子们进行自主探索与创造，帮助孩子们发展认知能力、建立科学意识、培养多角度思维。

Light can change colors, create shadows, and outline shapes and contours. Light and shadow phenomena are visually appealing and naturally attracting children, encouraging them to explore and create independently. This helps children develop cognitive skills, build scientific awareness, and cultivate multi-perspective thinking.

规格： 1320mm*800mm*1360mm
Specification: 1320mm*800mm*1360mm

Link
扫码观看项目示意

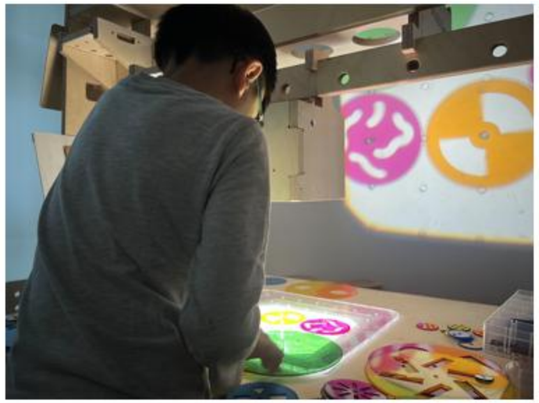
幼儿园 Kingdergarten　小学 Primary School

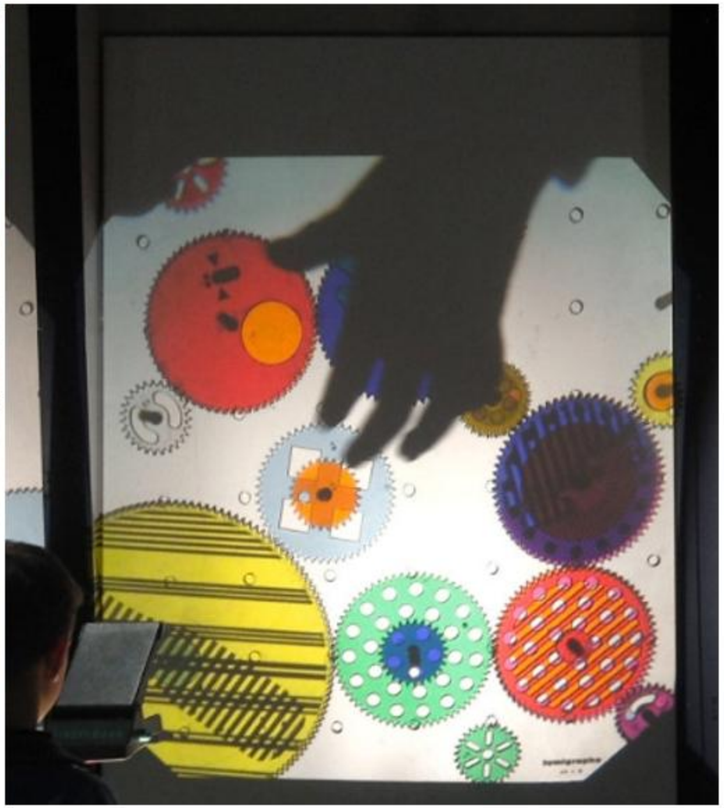
主题三：百变光影操作站

Theme 3: Protean Light and Shadow Operation Station

科创教育

科创教育





光影齿轮创意

LightShadow Gear Creative Kit

光影探索 Light and Shadow Exploration　多角度思维 Multi-perspective Thinking

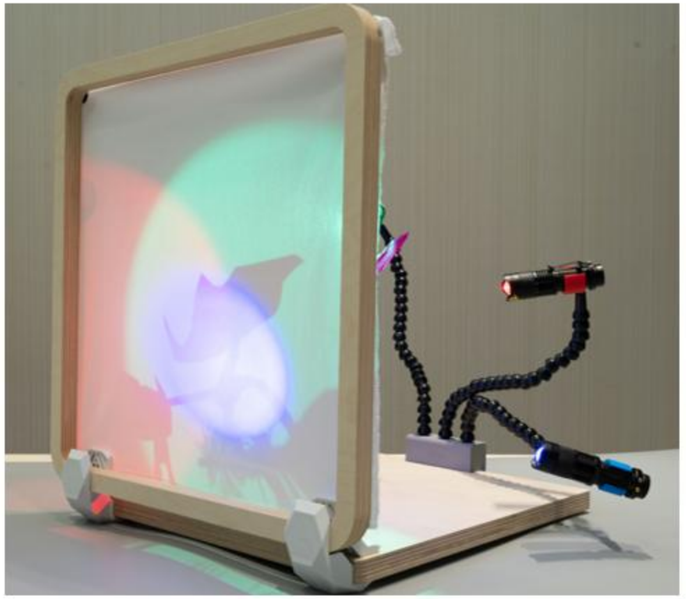
儿童可通过拼搭不同尺寸、颜色的齿轮结构，在动手实践中培养空间思维与机械原理认知，实现寓教于乐的沉浸式体验。通过结合光影工作站和三原色的设备，实现齿轮组合的旋转轨迹与色彩的趣味互动。

Children develop spatial cognition and mechanical logic through hands-on assembly of multi-scale, chromatic gear mechanisms. Integrated with our LightShadow Workstation and RGB modulation array, the kinematic patterns of rotating gear configurations dynamically interact with projected light fields, transforming abstract physics principles into tangible chromatic narratives. This sensorimotor learning ecosystem fosters engineering intuition and color theory comprehension via programmable gear-driven light choreography.

Link

扫码观看项目示意

幼儿园 Kingdergarten　小学 Primary School



三原色旋转艺术
RGB Light Rotational Art

光影探索 Light and Shadow Exploration　多角度思维 Multi-perspective Thinking

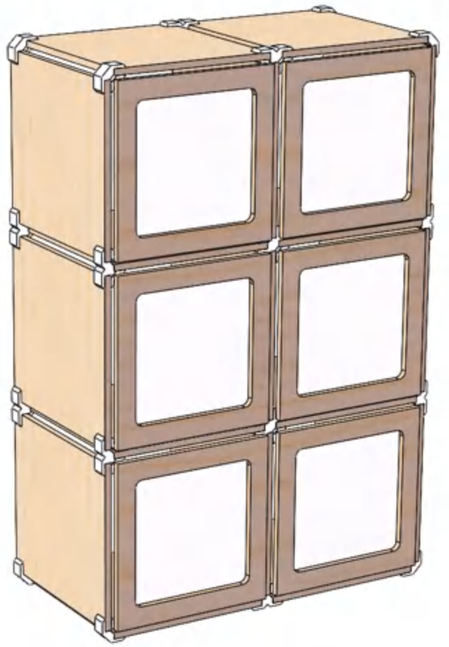
幼儿自行DIY创意作品，通过启动创意机器人的匀速旋转，红蓝绿灯光交织投射作品轮廓，幕布上呈现流动的色彩叠加动画，通过直观的动态光影变化感知三原色混色原理，激发艺术创造力与科学探索欲。

Young innovators activate DIY robotic platforms to generate constant rotational motion, triggering synchronized RGB light arrays that cast evolving silhouettes onto projection surfaces. Through real-time additive color synthesis visualized as cascading chromatic waveforms, children decode optical physics via tangible light modulation, cultivating STEAM competencies through experimental play that bridges kinetic art and spectral science.

幼儿园 Kingdergarten　小学 Primary School

Link
扫码观看项目示意

科创教育



光影小剧场

Light and Shadow Mini Theatre

光影探索 Light and Shadow Exploration　多角度思维 Multi-perspective Thinking

该工程启蒙装置融合机械与光学，通过组装动力系统学习齿轮传动；三原色灯光混合实验揭示色彩叠加原理；半透明幕布与木质展架搭建投影结构，解析成像要素。儿童在调试机械、混合光线、观察成像的互动中，锻炼逻辑思维与动手能力，通过观察-假设-验证深化科学认知，实现跨学科启蒙。

This Light and Shadow Mini Theatre combines moving parts and light experiments. Kids build motor-powered gears to see how machines work, mix colored lights (red, green, blue) to create new colors, and use a see-through screen to understand shadows and images. Through hands-on adjusting and testing, they learn problem-solving skills and basic science concepts, helping them connect different STEM subjects like engineering and physics in fun, practical ways.

规格： 1010mm*1570mm*530mm

Specification: 1010mm × 1570mm × 530mm

Link

扫码观看项目示意

幼儿园 Kingdergarten　小学 Primary School

科创教育

三原色互动装置
RGB Light and Shadow Workstation

光影 Light and Shadow　光的三原色 Three- Primary Colors of Light

利用三原色互动装置，你可以探索色光三原色的奥秘，用最基础的红光、蓝光和绿光创造出有规律却百变的光影世界。加上一些想象，还能打造一个充满童话色彩的世界。

Using the RGB light interactive device, you can explore the mysteries of the three primary colors of light, create a world of orderly yet ever-changing light and shadow with basic red, blue, and green lights. With a bit of imagination, it can even transform into a world full of fairy-tale colors.

单个规格：200mm*110mm*120mm，共3个

Specification:200mm*110mm*120mm each, 3 units totally

Link

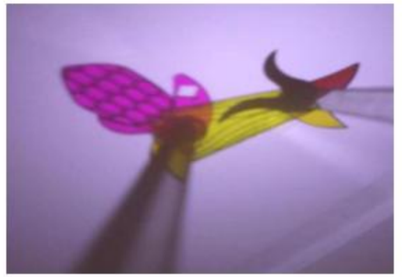
扫码观看项目示意

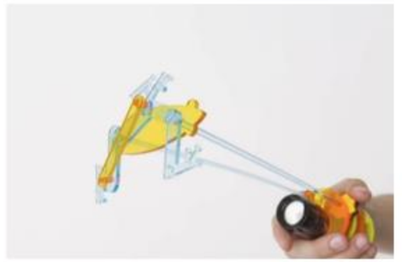
幼儿园 Kingdergarten　小学 Primary School

主题三：百变光影操作站

Theme 3: Protean Light and Shadow Operation Station

科创教育





光影探索套件
Light and Shadow Exploration Kit

光影探索 Light and Shadow Exploration　多角度思维 Multi-perspective Thinking

利用开放低结构材料与半开放性框架，让孩子自由进行光影套件的创作与光影探索。

配件：底座组件、亚克力造型组件、手电筒

Using open low-structure materials and semi-open frameworks, children can freely create with the light and shadow kit and explore light and shadow phenomena.

Accessories: Base components, acrylic shape components, flashlight

幼儿园 Kingdergarten　小学 Primary School

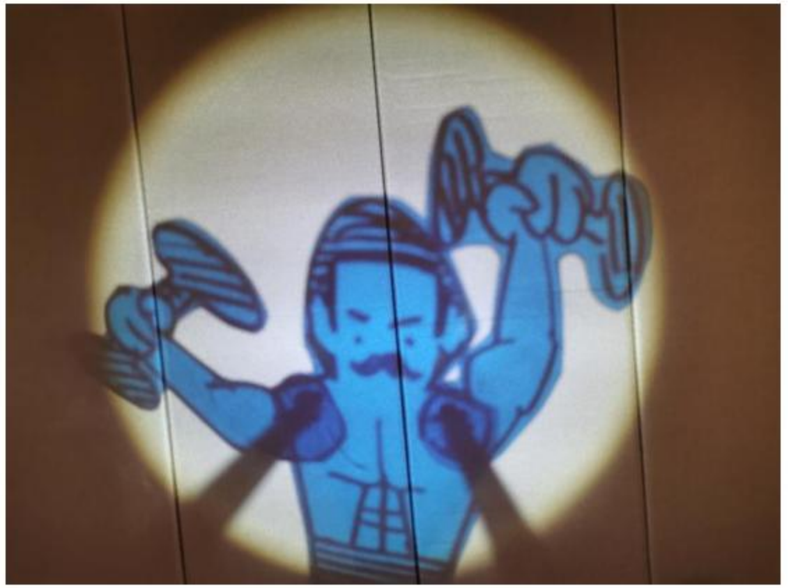
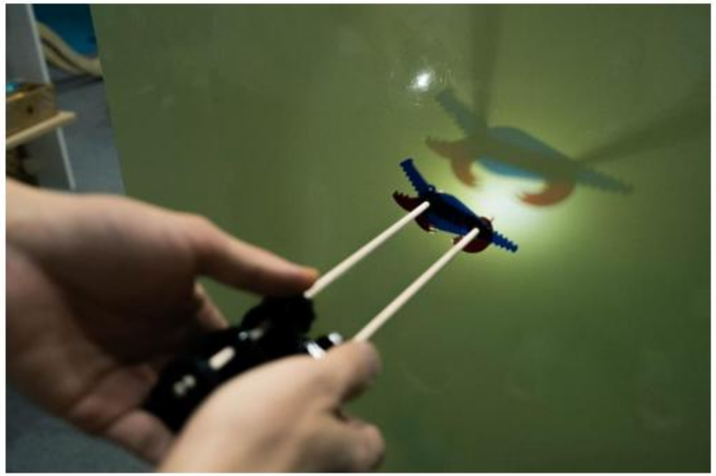
Link

扫码观看项目示意

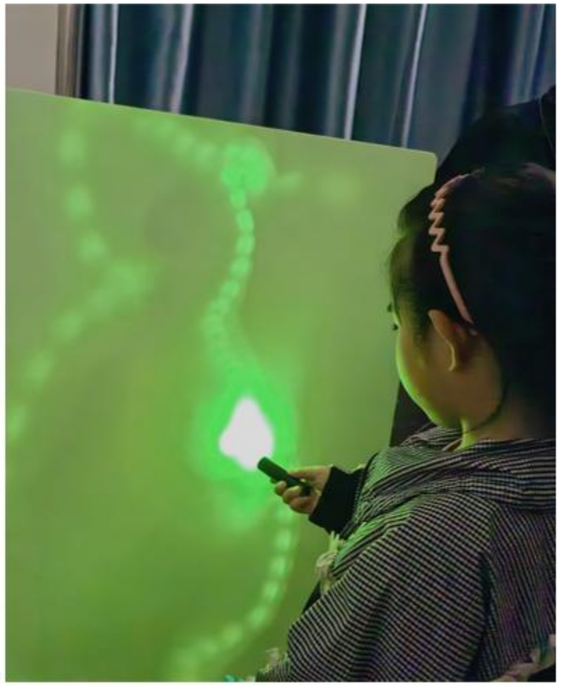
主题三：百变光影操作站

Theme 3: Protean Light and Shadow Operation Station




科创教育



灯光涂鸦板
Light Drawing Board

光影探索 Light and Shadow Exploration

蓄光特性 Light-Retaining Property

尝试一种利用光来绘画的新玩法，利用特殊材质的蓄光特性创作出独一无二的光绘作品。

Using light to try a new way of painting, creating unique light artworks with the light-retaining property of special materials.

单块规格： 880mm*350mm*1200mm

Specification: 880mm*350mm*1200mm each piece

灯光涂鸦实物

可配合手电光源使用

Link

扫码观看项目示意

幼儿园 Kingdergarten

小学 Primary School

科创教育

彩虹洞洞板
Rainbow Pegboard

光影探索 Light and Shadow Exploration　光影游戏 Light and Shadow Play

教学：孩子可以利用亚克力棒在洞洞板上做拼插造型，还可以搭配光影工作站和三原色光影装置做光影故事场景。

Teaching: Children can use acrylic rods to create shapes on the pegboard. They can also combine it with the Light and Shadow Workstation、RGB light Interactive Device to create story scenes with light and shadow.

木板规格： 540*540*8mm
亚克力棒： 126根

Pegboard Specification: 540*540*8mm
Acrylic Rod: 126pcs

Link
扫码观看项目示意

幼儿园
Kingdergarten

科创教育

主题四

电子电路操作站

Theme 4
Electronic and Circuit Operation Station

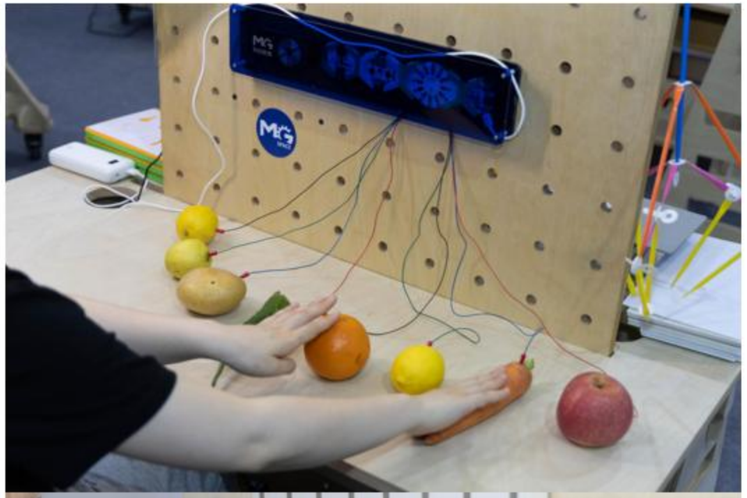
电子电路 Electronic and Circuit

创新创意 Innovation and Creativity

幼儿园 Kingdergarten

小学 Primary School

科创教育



MIDI音乐互动板
MIDI Music Interactive Board

电子模块 Electronic Module　导体 Conductor

MIDI音乐互动板支持你将任何导电物体变成乐器，蔬菜水果、金属制品、橡皮泥、铅笔画等都可以试一试。通过调节拨码开关可以得到不同乐器类型的MIDI音乐模式。

通过互动的方式来演奏音乐，还可以自制创意乐器，学习导体与非导体、人体导电等知识。

The MIDI Music Interactive Board allows you to turn any conductive object into a musical instrument—try it with fruits, vegetables, metal items, clay, pencil drawings, and more. By adjusting the dip switch, you can access different MIDI music modes for various instrument types.

Children can play music in an interactive way and create custom instruments, while also learning about conductors, non-conductors, and human conductivity.

规格： 450*120mm (DIY款），线长800mm
800*500*20mm (标准版)

款式： 钢琴款、萨克斯款、架子鼓款、铃铛款

Specification: 450*120mm (DIY version),cable length 800mm
800*500*20mm(Standard version)

Type: Piano/Saxophone/Drum Set/Bell

Link

扫码观看项目示意

幼儿园
Kingdergarten

科创教育

电子实验室系列课程
Electronic Lab Series Course

电子电路 Electronic and Circuit　电学启蒙 Electronic Introduction

4-8岁 Age 4-8　16个项目 16 Projects

本课程专为4-8岁儿童打造，结合课程套件，认识电子元件，利用模板动手制作电子发明。从简单电子元件认知开始，通过可控实验与测试深入了解电子元件的特性与基础应用，帮助儿童在趣味创造中系统地基础电路知识与元件的应用原理，解锁电子创造力。

This course is designed for children aged 4-8, using course kits to introduce electronic components and create hands-on electronic invention. Starting with basic recognition of electronic components, children deepen their understanding of component characteristics and fundamental applications through controlled experiments and tests. This helps children systematically learn foundational circuit knowledge and the principles of component use in a fun, creative way, unlocking their electronic creativity.

幼儿园 Kingdergarten　小学 Primary School

Link

扫码观看课程详情

科创教育

电学启蒙套件
Electricity Introduction Kit

电子启蒙 Electronic Introduction　电路学习 Circuit Learning

支持孩子在安全的前提下自由探索电路，将常规电子元器件与极具质感的胡桃木底座相结合，像拼搭积木一样零门槛开始电子启蒙，学习电子元器件、完成电路连接的任务。满足孩子的好奇心，获得真实、严谨却又趣味性十足的电学启蒙体验。

This kit supports children in safely exploring circuits, combining regular electronic components with a high-quality walnut base. Just like building with blocks, children can easily begin learning about electronics with no barriers, studying electronic components and completing circuit connections. This satisfies children's curiosity, providing a real, rigorous, yet highly engaging experience in electricity discovery.

单块规格：60*100mm（长宽）或50*100mm（长宽）共计16pcs
包装规格：230*230*100mm （长宽高）

Specification(each pc): 60*100mm(length x width) or 50*100mm(length x width) 16pcs in total
Packing Dimension: 230*230*100mm (length x width x height)

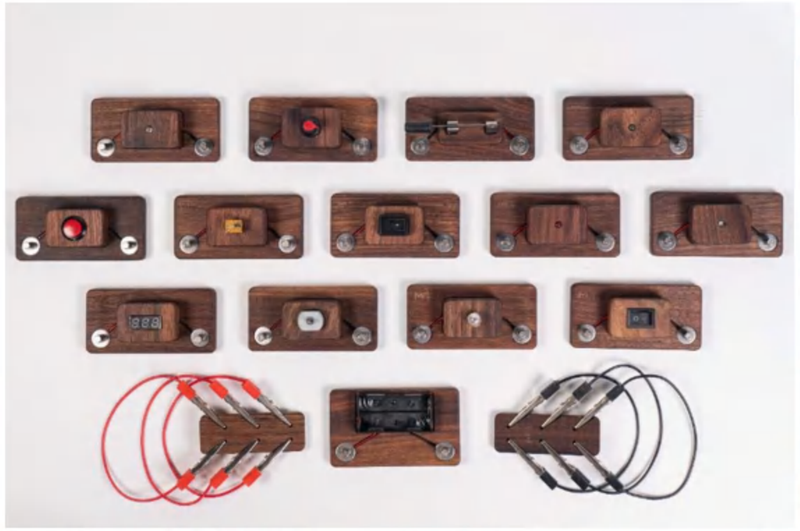
video
扫码观看学校应用

幼儿园 Kingdergarten　小学 Primary School

主题四：电子电路操作站

Theme 4: Electronic and Circuit Operation Station

科创教育



导电面团实验室
Conductive Dough Lab

电子启蒙 Electronic Introduction　36个主题 36 Themes

通过简单的动手制作，以面团或橡皮泥为导体，连接电路，点亮LED灯、连接蜂鸣器、启动马达，完成立体的电路模型。用安全有趣的方式了解简单电子元件，探索基本电路连接。激发儿童对电子学习的兴趣，锻炼立体空间意识，培养多角度思维

Through simple hands-on projects using dough or clay as a conductor, children can connect circuits to light up LEDs, connect buzzers, start motors, and create 3D circuit models. This safe and fun activity helps children understand basic electronic components and explore simple circuit connections. It sparks interest in electronics, enhances spatial awareness, and fosters multi-perspective thinking.

元器件：每套包含主控板*1，9V电池*1（带电池扣），电机*1（带螺旋桨），压电式蜂鸣器*1，机械式蜂鸣器*1，船型开关*1，LED灯*12，杜邦线*4

包装规格：183*88*45mm

Components: main control board*1, 9V battery (with clip)*1, motor (with propeller)*1, piezo buzzer*1 , mechanical buzzer*1, rocker switch*1 , LEDs*12, Dupont wires*4

Packaging Dimension: 183 x 88 x 45mm

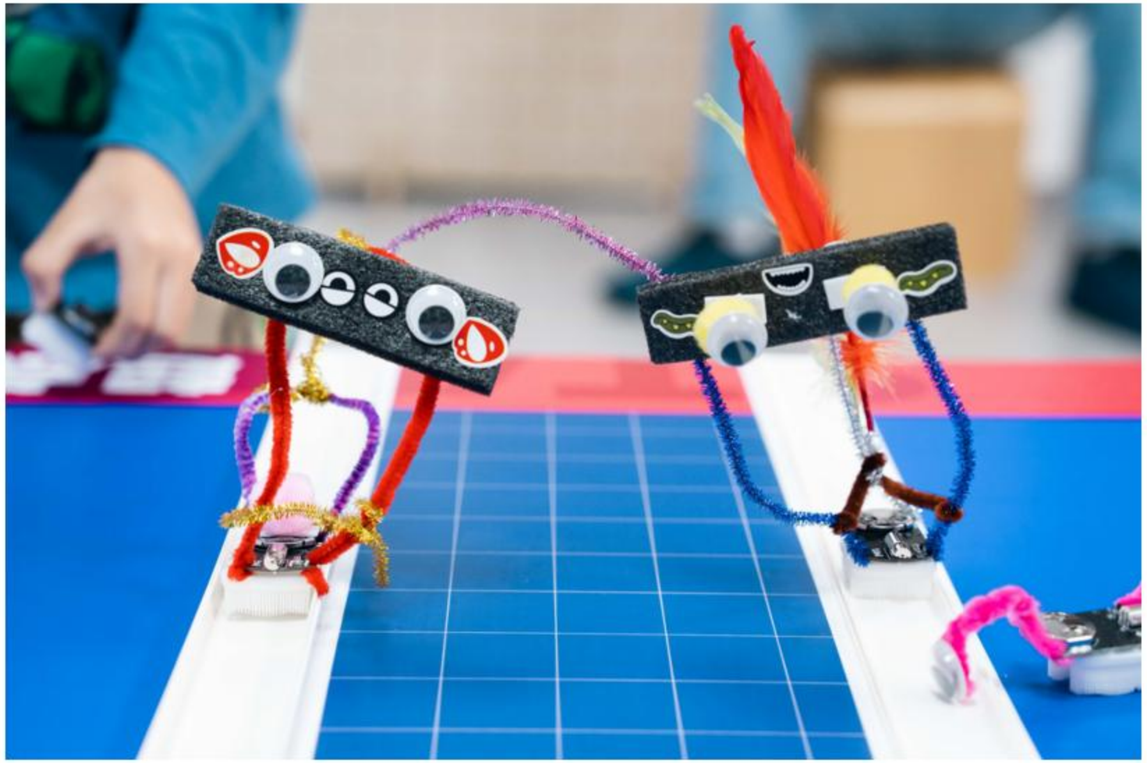
video
扫码观看项目示意

幼儿园
Kingdergarten

主题四：电子电路操作站

Theme 4: Electronic and Circuit Operation Station

科创教育



牙刷机器人工作坊
Toothbrush Robot Workshop

电子电路 Electronic and Circuit　创新创意 Innovation and Creativity

利用振动马达、电容、开关等电子元器件设计与制作牙刷机器人，参与牙刷机器人大挑战，学习科学原理，解锁科技创造力。

Design and create toothbrush robots using components such as vibration motors, capacitors, and switches. Participate in the toothbrush robot challenge to learn scientific principles and unlock technological creativity.

幼儿园 Kingdergarten　小学 Primary School

Link
扫码观看详情

创意机器人
Creative Robot

电子电路 Electronics and Circuits　创新创意 Innovation and Creativity

利用电源与电机，并借助生活中的一些简单材料制作一个有趣的破烂变形机器人。

原理：电池给减速电机供电，减速电机带动变形机器人的动力件转动，变形机器人的动力件与地面间的摩擦力，让变形机器人向前行进。

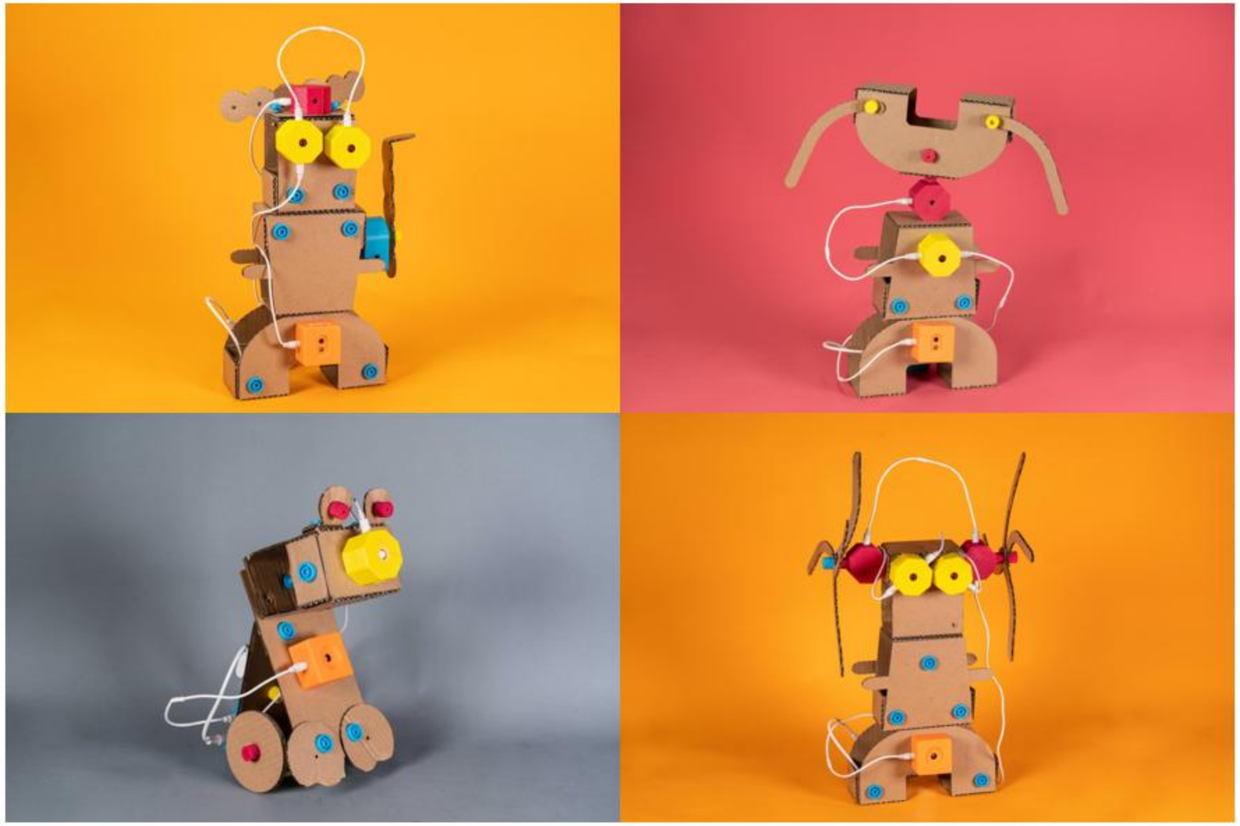
Create an interesting junk-transformation robot by using a power source, motor, and simple materials.

Principle: The battery powers a geared motor, which drives the robot's moving part. The friction between the moving part and the ground propels the robot forward.

幼儿园 Kingdergarten　小学 Primary School

Link
扫码观看详情

科创教育



易趣智造+纸板机器人

Smart DIY Cardboard Robot

电子电路 Electronic and Circuit　创新创意 Innovation and Creativity

利用传感器模块，轻松上手制作纸板机器人，实现不同的运动效果，例如，拍掌的时候，纸板机器人摇尾巴。靠近的时候，机器人朝你挥手。当环境变暗时，机器人自动发光。当你发出声音时，机器人向前行进。传感器模块 + 易于创作的低结构纸板，尽情发挥你的创意吧！

说明：赠送纸板模型。

Using sensor modules, easily create a cardboard robot that can perform different movements. For example, when you clap, the cardboard robot wags its tail. When you approach it, the robot waves at you. When the environment turn dark, the robot lights up automatically. When you make a sound, the robot moves forward. With the sensor module and easily customizable low-structure cardboard, just show your creativity!

Note: includes free cardboard models.

Link

扫码观看详情

幼儿园 Kingdergarten　小学 Primary School

科创教育

主题五
工程建构操作站

Theme 5
Engineering Construction Operation Station

工程建构 Engineering Construction

低结构 Low-Structure

开放性 Open-Ended

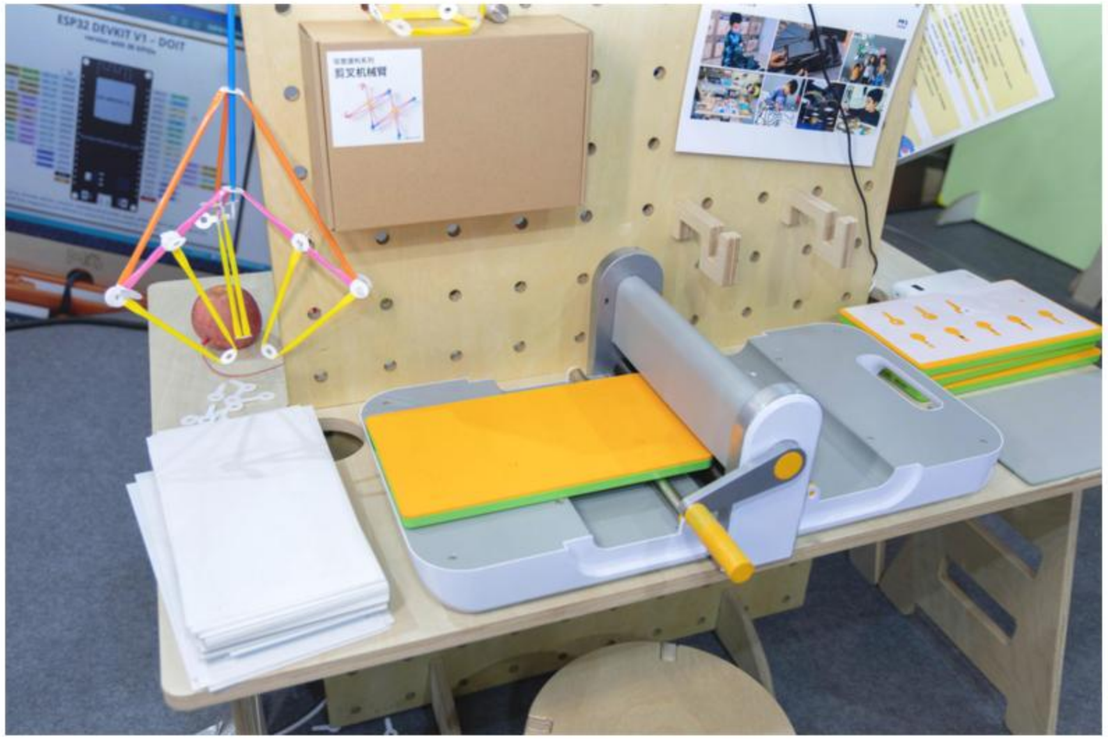
幼儿园 Kingdergarten

小学 Primary School

科创教育

吸管连接件加工机器
Straw Connector Processing Machine

工程建构 Engineering Construction　生产制造 Manufacturing



“单元越简单，创意越无限”，用生活中最简单的材料实现最疯狂的创意。期待为每一个爱创造的人提供了一个支点，让你的创意成为无限长的力臂，撬动自己大大的梦想。

吸管连接件加工机器让孩子们体验从生产到搭建的全过程，理解探索物料的生产过程。

The simpler the unit, the more limitless the creativity. Achieve the wildest ideas using the simplest materials from everyday life. We aim to provide a starting point for every creativity lover, allowing your imagination to become an infinite lever to lift big dreams.

The straw connector processing machine enables children to experience the entire process from production to construction, helping them understand and explore the material production process.

规格：640*330*190mm（长宽高）

Specification: 640*330*190mm(length x width x height)

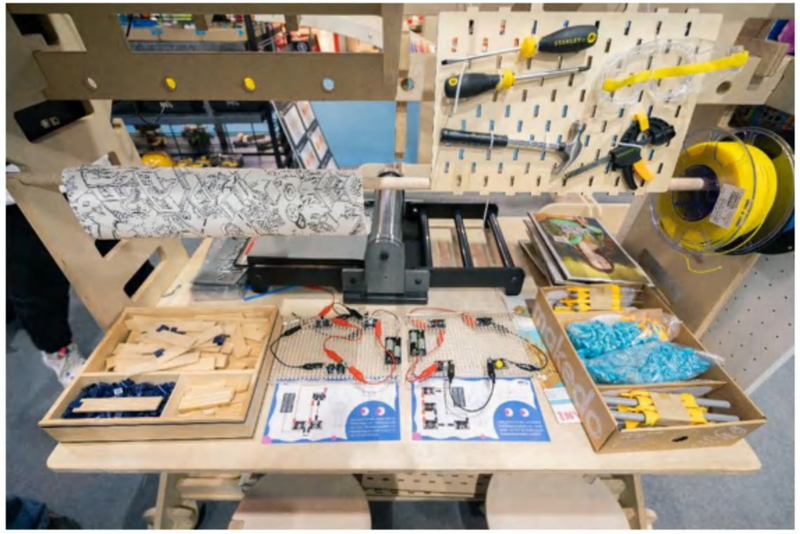
Link
连接件用法及课程

幼儿园 Kingdergarten　小学 Primary School

主题五：工程建构操作站

Theme 5: Engineering Construction Operation Station

科创教育



吸管创意建构课程
Straw Creative Construction Course

工程建构 Engineering Construction | 12个主题 12 Subjects | 48个项目 48 Items

项目式学习课程。围绕 SDG 联合国可持续发展目标，对标 NGSS 美国下一代科学标准。

以情景导入+动手制作+拓展游戏的教学模式，涵盖多个经典儿童教育主题。低结构单元，轻松上手，全方位培养幼儿的空间想象力、动手能力、工程创造力，提升幼儿的问题解决能力。

This is a project-based learning course that aligns with the UN Sustainable Development Goals (SDGs) and the Next Generation Science Standards (NGSS).

Using a teaching model that combines scenario introduction, hands-on making, and extension games, the course covers various classic themes in early childhood education. With low-structure units that are easy to engage with, the course comprehensively develops children's spatial imagination, hands-on skills, and engineering creativity, while enhancing their problem-solving abilities.

幼儿园
Kingdergarten

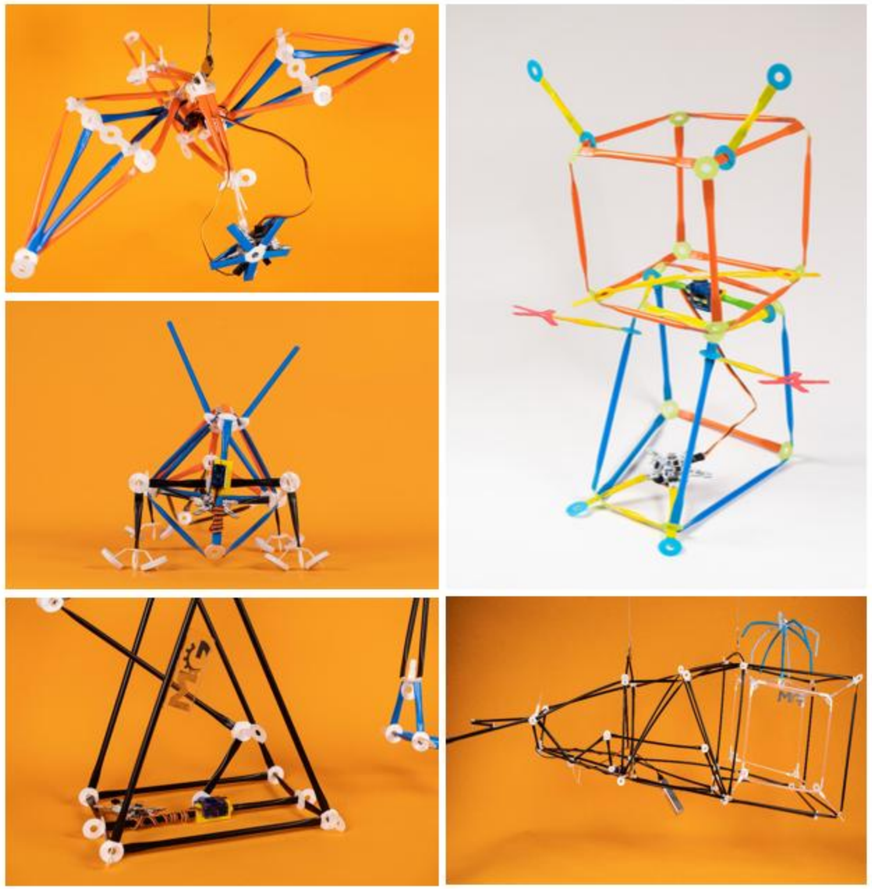
Link
连接件用法及课程

主题五：工程建构操作站

Theme 5: Engineering Construction Operation Station

科创教育

科创教育



控制板套件 - 吸管创意+
Controller Board Kit-Straw Creativity+

工程建构 Engineering Construction　电子电路 Electronics and Circuits

“单元越简单，创意越无限”，用生活中最简单的材料实现最疯狂的创意。期待为每一个爱创造的人提供了一个支点，让你的创意成为无限长的力臂，撬动自己大大的梦想。

吸管控制板支持你实现更进阶的项目创意，让你的作品动起来。

*说明：本品需搭配吸管、吸管连接件共同使用。

The simpler the unit, the more limitless the creativity. Achieve the crazy ideas using the simplest materials from everyday life. We aim to provide a starting point for every creativity lover, allowing your imagination to become an infinite lever to lift big dreams.

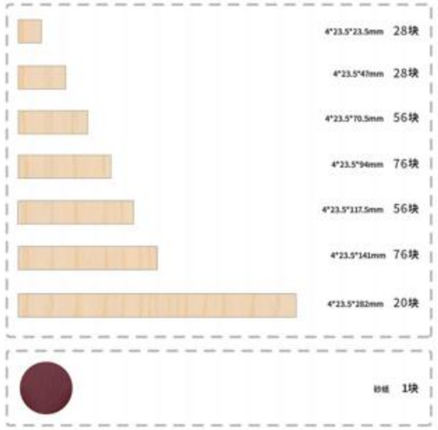
The Straw Control Board supports you in realizing more advanced project ideas, bringing your creations to life.

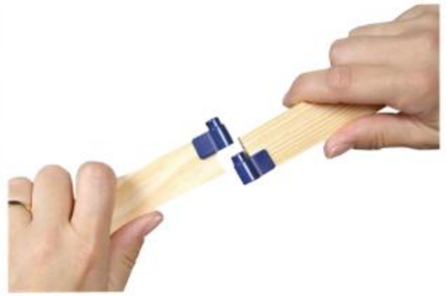
Note: This product must be used in conjunction with straws and straw connectors.

Link
吸管创意+ 课程介绍

小学
Primary School

科创教育





小木块创意建构
Wood Block Construction

工程建构 Engineering Construction　低结构材料 Low-Structure Materials　高度开放 Hiligh Open-ended

利用小木块与小木块连接件，孩子们能够自由创意组合，完成心目中的创想，汽车、飞机、动物甚至服饰。安全便捷，快速搭建原型。

Using small wooden blocks and wooden block connectors, children can freely combine their ideas and create their envisioned designs, such as cars, airplanes, animals, and even clothing. It is safe and convenient, allowing for quick prototype building.

Video
项目示意

幼儿园 Kingdergarten　小学 Primary School

主题五：工程建构操作站

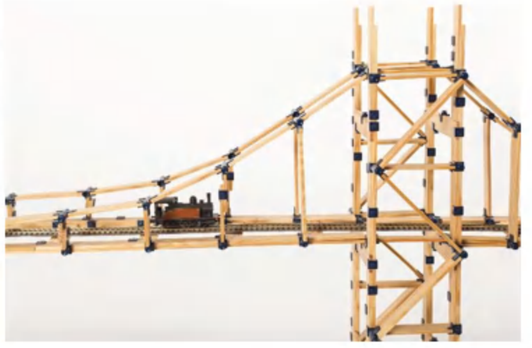
Theme 5: Engineering Construction Operation Station

科创教育







科创教育

纸板创意工具套装
Cardboard Creative Tool Kit

工程建构 Engineering construction　低结构材料 low-structure materials　高度开放 highly open

纸箱创意工具套装专为3-8岁儿童设计，采用3D打印PLA材质制作安全切割锯、折痕滚刀等专业工具，搭配可循环纸箱连接扣。通过趣味手工搭建激发孩子创造力，在切割、打孔、组装过程中培养动手能力，同时践行环保理念，鼓励利用废旧纸箱进行艺术创作，让环保意识与科技启蒙在寓教于乐中萌芽。

The Cardboard Creative Tool Kit is specially designed for children aged 3-8. It includes professional tools like a safety cutting saw and creasing wheel cutter made from 3D-printed PLA material, along with reusable cardboard connectors. Through fun hands-on building activities, it sparks children's creativity and nurtures their practical skills in cutting, punching, and assembling. At the same time, it promotes eco-friendly values by encouraging artistic creations using recycled cardboard boxes—fostering environmental awareness and technological inspiration in a playful, educational way.

Link
扫码观看项目示意

幼儿园 Kingdergarten　小学 Primary School

科创教育

纸箱创意DIY车轮套装
Cardboard Creative DIY Wheel Kit

工程建构 Engineering construction　低结构材料 low-structure materials　高度开放 highly open

这款专为 3 - 6 岁儿童设计的 DIY 创意项目，聚焦环保再利用理念。借助色彩鲜艳的车轮、连接件等组件，搭配环保回收的纸箱纸盒，让孩子们化身小小工程师 。在动手操作中，充分激发科技创造力，开启工程教育启蒙之旅，既锻炼动手能力，又培养环保意识，为孩子带来趣味与教育兼具的独特体验。

This DIY creative project is specifically designed for children aged 3 - 6 years old, focusing on the concept of environmental recycling. With brightly colored wheels, connectors and other components, combined with environmentally recycled cardboard boxes, children can become little engineers. Through hands-on operations, it fully stimulates scientific and technological creativity, starts the journey of engineering education enlightenment, not only exercises hands-on ability but also cultivates environmental awareness, bringing a unique experience that combines fun and education for children.

Link

扫码观看项目示意

幼儿园 Kingdergarten　小学 Primary School

科创教育

多维纸板套装
Multidimensional Cardboard Kit

工程建构 Engineering construction　低结构材料 low-structure materials

通过可循环使用的环保纸板与创新连接件，配合LED灯组、微型电机等电子模块，让孩子在搭建的过程中，直观地理解基础电路原理与机械传动知识。开放式结构设计支持多种组合方式，培养工程思维与问题解决能力。让孩子在动手创造会发光、能转动的动态作品时，同步提升空间想象力和跨学科创新能力。

Crafted with recyclable eco-friendly cardboard and innovative connectors, paired with electronic modules like LED light sets and micro motors, this kit enables children to intuitively grasp fundamental circuit principles and mechanical transmission knowledge through hands-on assembly. The open-ended structural design supports diverse combinations, cultivating engineering thinking and problem-solving skills. As young creators build dynamic, light-up and rotating projects, they simultaneously enhance spatial imagination and interdisciplinary innovation capabilities.

幼儿园 Kingdergarten　小学 Primary School

Link

扫码观看项目示意

科创教育

纸板创意建构
Cardboard Creative Construction

工程建构 Engineering construction | 低结构材料 low-structure materials | 高度开放 highly open

利用最普通的材料完成非凡的创意，关爱地球、永续发展，利用回收纸板与可复用的纸箱扣，大开脑洞，实现自己的想法。从设计到制作，从团队协作到独立创造，培养儿童的环保意识，解锁创造力，提升问题解决能力，让孩子从玩具消费者成长为创意设计师。

Use the most ordinary materials to achieve extraordinary creativity. Care for the Earth and promote sustainable development by utilizing recycled cardboard and reusable cardboard connectors to unlock your imagination and realize your ideas. From design to production, from teamwork to independent creation, this course cultivates children's environmental awareness, unlocks their creativity, and enhances their problem-solving skills, transforming them from toy consumers into creative designers.

Video
使用方法

Link
纸箱创意建构活动

幼儿园 Kingdergarten

小学 Primary School

主题五：工程建构操作站

Theme 5: Engineering Construction Operation Station






Link

纸箱变形记活动

瓶盖创意建构
Bottle Cap Creative Construction

工程建构 Engineering Construction　低结构材料 Low-Structure Material　高度开放 Hiligh Open-ended

利用最普通的材料完成非凡的创意，关爱地球、永续发展，利用可回收的瓶盖加上瓶盖连接件，实现自己的3D创意设计，接口可以兼容乐高型积木，有很强的延展性，和家里的玩具结合使用，继续深化创意。

Use the most ordinary materials to achieve extraordinary creativity. Care for the earth and promote sustainable development by using recyclable bottle caps along with bottle cap connectors to realize your 3D creative designs. The connectors are compatible with LEGO-style blocks, offering high versatility and allowing for integration with household toys to further deepen creative possibilities.

Video
扫码查看介绍

幼儿园 Kingdergarten　小学 Primary School

科创教育

工程建构墙面
Engineering Construction Wall

工程建构 Engineering Construction　协作创造 Collaborative Creation

磁铁互动+洞洞互动。一面可玩磁力玩具，另一面利用洞洞板进行开放探究。

材质：全桦木胶合板，采用北欧桦木为原材料，中间胶水为酚醛胶，木质紧密，韧性好，层次均匀。

Magnetic interaction + pegboard interaction. One side is designed for magnetic toys, while the other side allows for open exploration with the pegboard.

Material: Made from full birch plywood using Nordic birch as the raw material, with phenolic glue for the layers, providing dense wood with good flexibility and uniform layers.

规格： 1900mm*820mm*1275mm

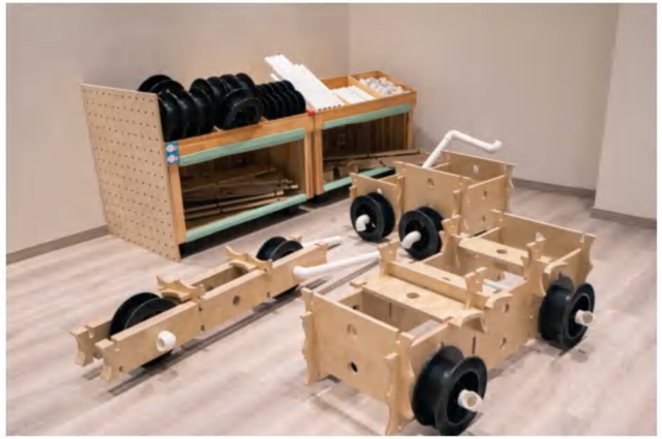
Specification: 1900mm*820mm*1275mm

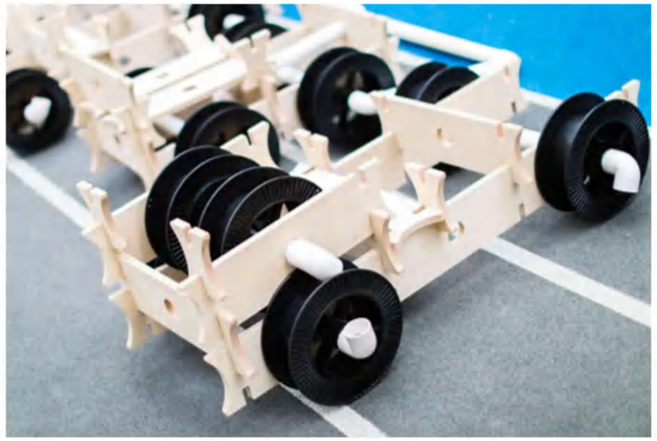
Link

扫码观看项目示意

幼儿园 Kingdergarten　小学 Primary School

科创教育



工程建构套件
Engineering Construction Kit

工程建构 Engineering Construction　协作创造 Collaborative Creation

百变工程建构支持孩子进行完整的工程建构体验，设计建筑，打造熙熙攘攘的城市；组合结构，搭建疾驰的小车；还可以自由打造你心目中的故事场景。套件包括木质结构件、PVC管材、塑料轮轴等材料，满足从结构到功能的搭建需求。

The engineering construction kit provides children with a complete engineering and construction experience. They can design buildings and create bustling cities, assemble structures to build speedy cars, or freely craft story scenes of their imagination. The kit includes wooden structural components, PVC pipes and plastic axles, meeting construction needs from structure to function.

组件数量： 每套包含20种配件，共计 150pcs

Component Qty: 20 types of components/set, totally 150 pieces.

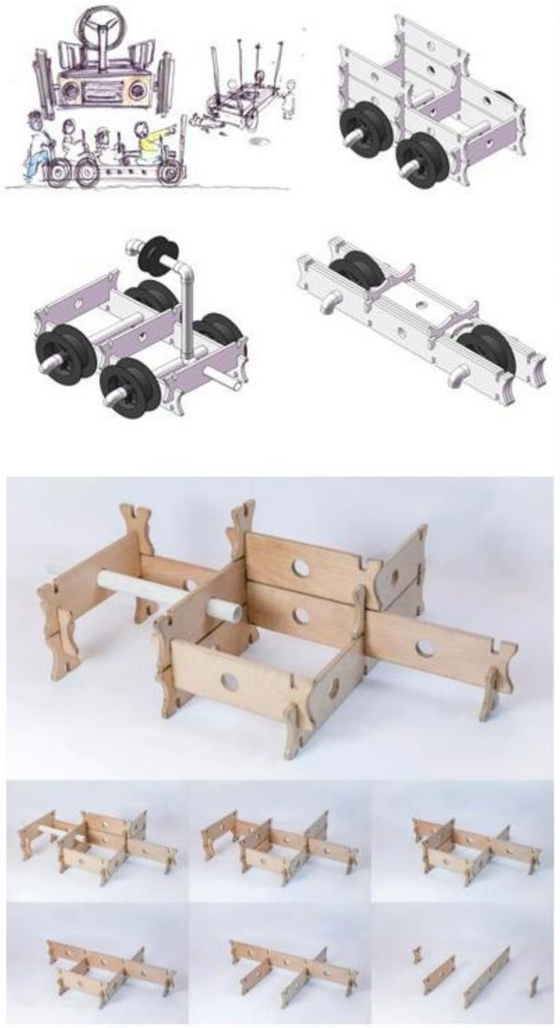
Link

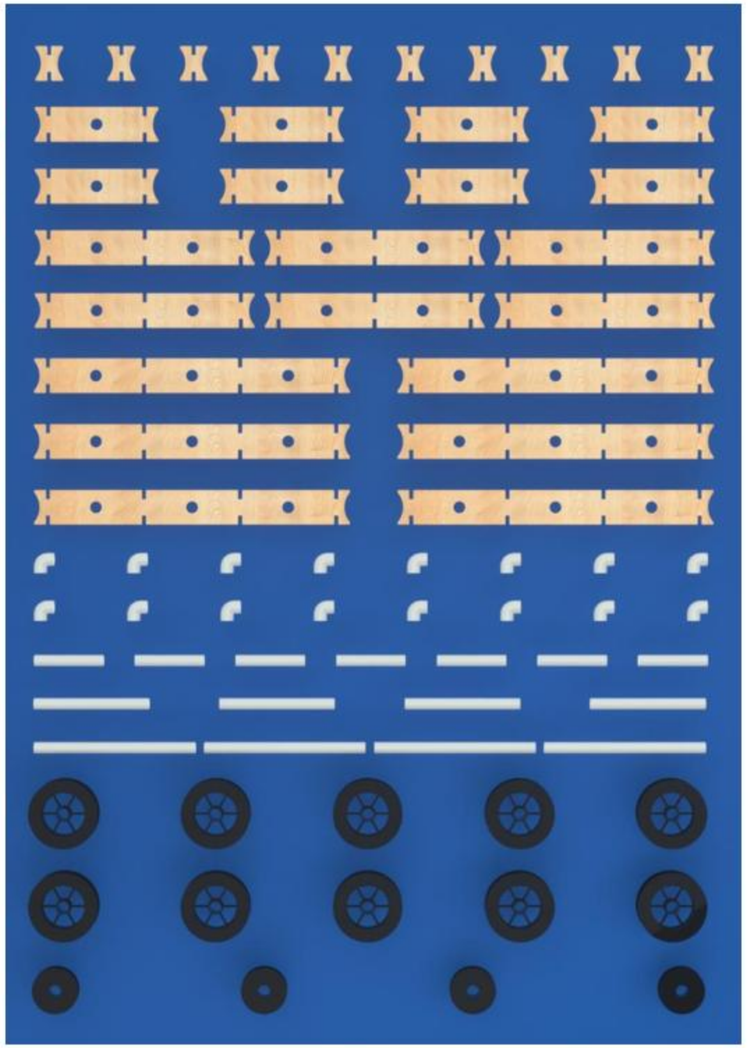
扫码观看项目示意

幼儿园 Kingdergarten　小学 Primary School

主题五：工程建构操作站

Theme 5: Engineering Construction Operation Station



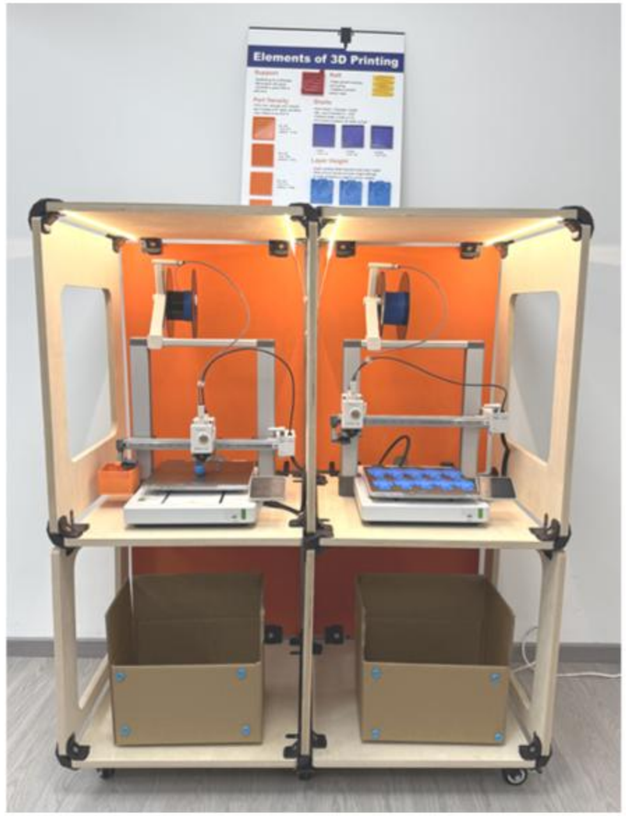


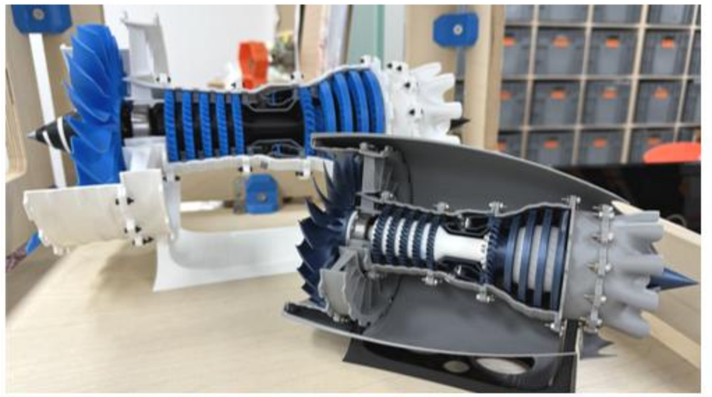
主题六
智能智造

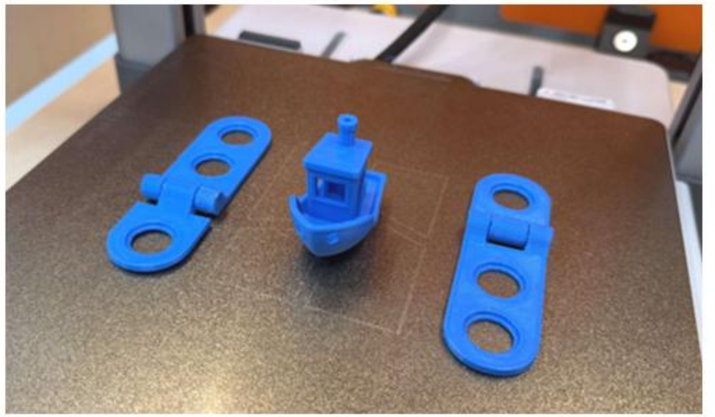
Theme 6
Intelligent Manufacturing

开放智造 Open Creation

教玩具设计 Teaching Aids and Toys Design



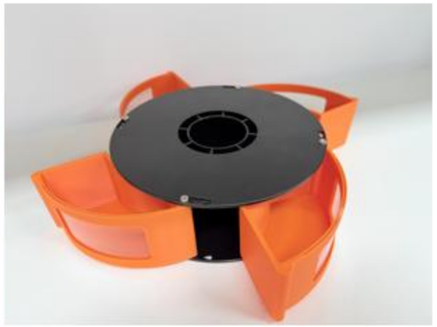




幼儿园 Kingdergarten

小学 Primary School

科创教育



3D打印工作站
3D Print Workstation

智能智造 Intelligent Manufacturing　自己做玩具 DIY Toys

MG专为教育者定制3D打印机，提供师训、提供STEAM教玩具设计文件，支持教育者开放造物，支持孩子们自己“造玩具”。

MG provides customized 3D print for educators, offers teacher training and providing STEAM educational toy design files. It supports educators in open creation and enables children to "make toys themselves".

工作站整体尺寸：1160*1275*630mm
打印尺寸：256 *256 *256 mm
打印类型：FMD（热熔堆积）
支持耗材类型：推荐打印 PLA 类、PETG 类、TPU 类等

Overall dimensions of the workstation: 1160*1275*630 mm
Printing size not less than 256 *256 *256 mm (length × width × height)
Printing type: FMD (Fused Material Deposition)
Supported filament types: Recommended for printing with low-temperature filaments such as PLA, PETG, TPU.

video
扫码观看项目示意

幼儿园 Kingdergarten　小学 Primary School

科创教育

主题七
环创家具

Theme 7
Makerspace Furniture

环境布置 Environment Creation

功能性家具 Functional Furniture

幼儿园 Kingdergarten

小学 Primary School

科创教育

木质创客工作站

Wooden Maker Workstation

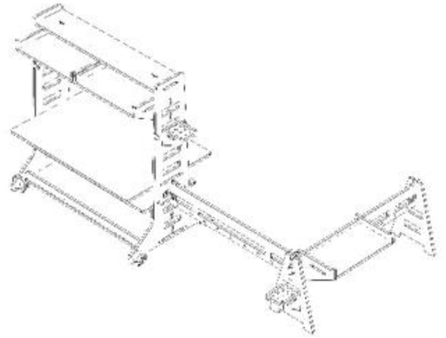
空间展陈 Space Display　功能性家具 Functional Furniture

木质创客工作站包含主工作台以及拓展工作台面，带轮可移动，支持悬挂教具、收纳动手操作用品，侧面可挂展示互动板或者工具陈列表等。将环境家具也变成学生能够动手互动的一部分。

The wooden maker workstation includes a main workbench and an expanded tabletop. It is easy to move with wheels and supports hanging teaching tools and storing hands-on materials. The sides can display interactive boards or lists of tools. This transforms the furniture into a part of the students' hands-on interaction.

规格： 1320mm*800mm*1360mm

Specification: 1320mm*800mm*1360mm

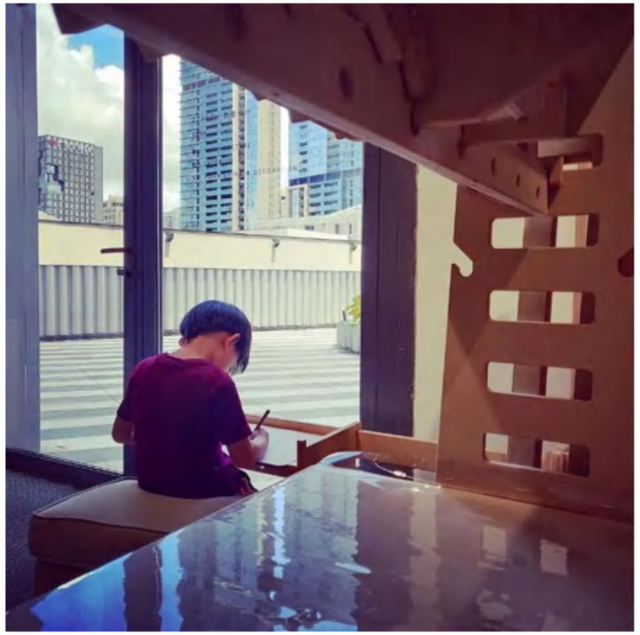


幼儿园 Kingdergarten　小学 Primary School

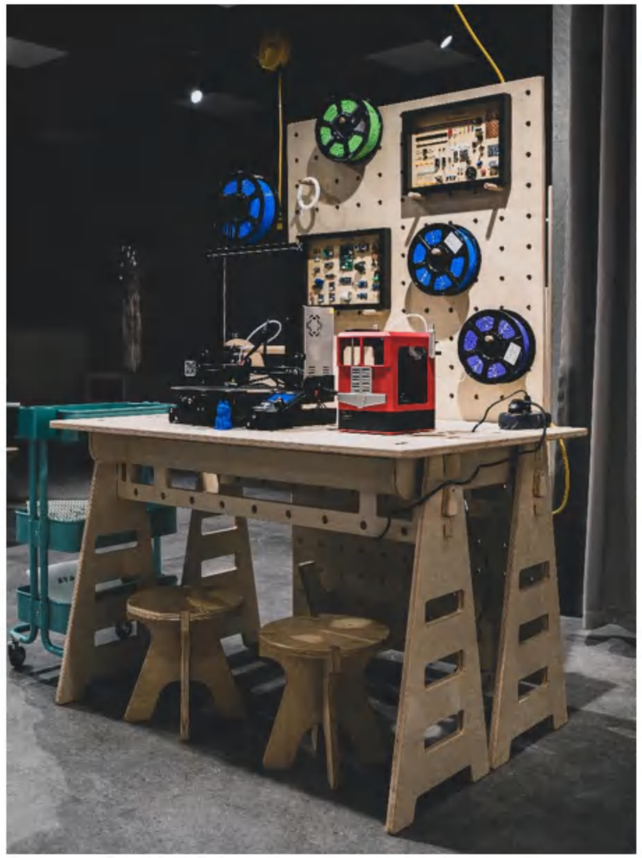
主题七：环创家具

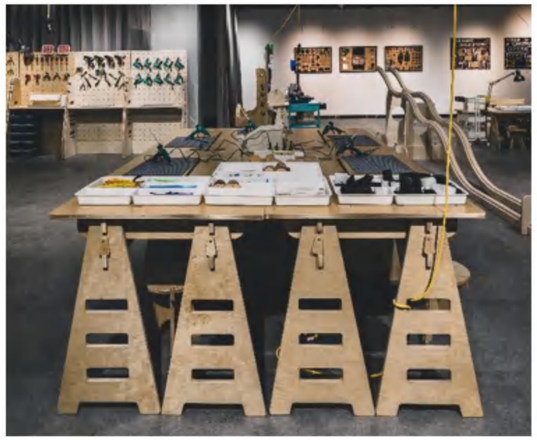
Theme 7: Makerspace Furniture

科创教育



科创教育





多功能工作台&洞洞板

Multifunctional Workbench & Pegboard

环境布置 Environment Creation　功能性家具 Functional Furniture

多功能工作台可以和洞洞板结合使用，做展示陈列、摆放互动项目、充当动手桌面。工作台的桌腿间隙可以用来连接低结构建构材料，让环境家具也能够成为互动项目的一部分。

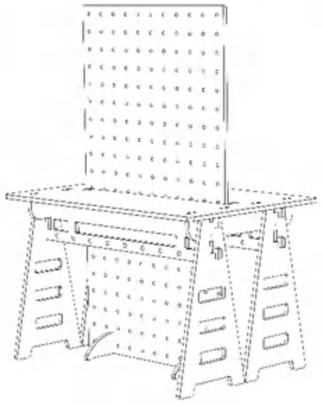
The multifunctional workbench can be used in conjunction with the pegboard for display, placement of interactive projects, and as a hands-on tabletop. The gap between the table legs can be used to connect low-structure construction materials, allowing the environmental furniture to also become part of interactive projects.

A款规格： 1180mm*800mm*750mm

B款规格： 1180mm*800mm*550mm

Model A Specification： 1180mm*800mm*750mm

Model B Specification： 1180mm*800mm*550mm

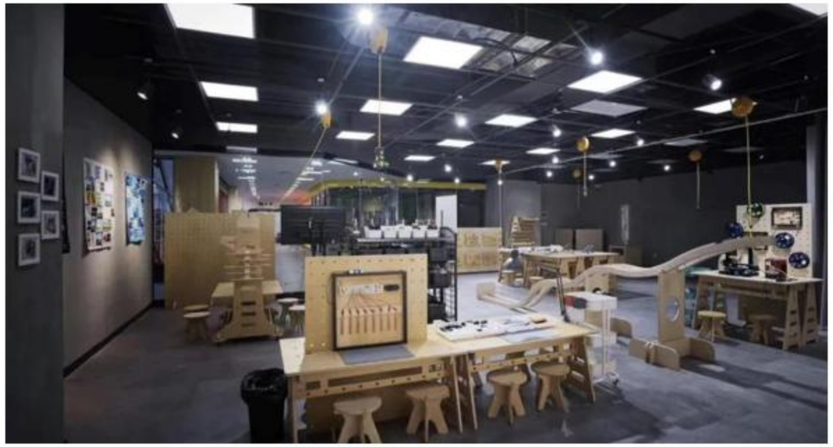


幼儿园 Kingdergarten　小学 Primary School

主题七：环创家具

Theme 7: Makerspace Furniture

科创教育



科创教育

主题课程

Thematic Courses

课程方案
Course Plans

课程材料
Course Materials

科创教育

创客设计系列课程
Maker Design Series Courses

力与运动 Force and Motion　简单机械 Simple Machine

电路 Circuit　12个项目 12 Projects

12个经典机械与电子工程项目，使用木棍与结构件搭建结构，结合电子元件连接电路，利用回收材料进行装饰与创意设计，让孩子体验设计-制作-测试-迭代的工程项目设计过程，学习机械与电子相关知识，掌握多种材料与工具的使用技巧，收获解决问题的能力。

12 classic mechanical and electronic engineering projects where students use sticks and structural components to build structures, connect circuits with electronic parts, and decorate with recycled materials. This hands-on experience allows kids to go through the design-making-testing-iteration process, learning about mechanics and electronics, mastering the use of various materials and tools, and developing problem-solving skills.

小学
Primary School

Link

扫码观看课程详情

序号	项目名称	关键词	项目简介
1	风力车	电 能量转换 动能 反冲力 空气动力学 阻力 测试 效率 能量	该项目中学生将通过观察生活中的反冲现象，分析反冲现象中的受力情况，并根据结论结合简单电路设计并制作一辆可以顺利行进的反冲小车，并对小车的外观进行设计。
2	轨道挑战	斜面 重力势能 能量转换 调整 轨道 距离 测试 高度与距离	该项目中学生将动手搭建一个小球可以滚下的斜面轨道，并调整轨道的坡度，测试不同坡度下小球滚动 的距离，探究坡度与小球滚动距离之间的关系。
3	风力发电机	电 能量转换 力 平衡 倾斜角度 加速稳定性 测试 效率 能量 LED电压与电流	该项目通过制作风力涡轮发电机让学生了解风能与电能的转化过程。利用回收材料制作一个风力涡轮发电机并自己设计桨叶， 达成涡轮发电的效果，并通过万用表等测量仪器测量桨叶角度、与风扇的距离对输出电压的影响。
4	摩天轮	电路 平衡 减速电机 皮带轮 皮带轮传动 旋转 力 设计与制作	该项目通过减速电机带动皮带轮，再通过皮带轮轴带动毂上的“摩天轮”。学生将了解皮带轮的传动特点，连接简单电路，搭建 并测试摩天轮使它保持平衡，实现理想效果。
5	皮带轮小车	皮带轮 减速电机 电路符号 电路连接 小车设计 测试与迭代	本项目利用电源带动减速电机转动，通过皮带轮传动控制小车轮轴运动。通过本次课程，学生可以学习到基础电子元器件的符 号和作用，并掌握基本电路连接，之后了解带轮传动过程中的运动转换，设计与制作电动皮带轮小车。
6	乒乓球发射器	摩擦力 摩擦轮 探究与测试 并联 电路原理 电路图 发射器	该项目利用双电机并联电路，带动摩擦轮高速旋转将乒乓球推射出去。通过本次课程，学生将探究增大摩擦力的因素，学习项 目的电路原理，并尝试绘制电路原理图。
7	桥梁设计	桥梁 三角形 镜像图形 拉力 承重 稳定性 测试 结构	该项目中学生将结合结构件、木棍与绳子等材料设计并搭建一座桥梁，并测试它的承重效果。通过该项目，学生将了解不同类 型的桥梁，学习三角形的稳定性，探究让桥梁更稳定的方法。
8	投球机	弹力 弹性形变 力 距离 测试 记录与分析	该项目中学生将了解物体的弹性形变与弹力，利用橡皮筋的弹力结合结构件制作一个投篮机。观察拉动木棍的力气大小对小 球发射距离产生的影响，探究与距离的关系。
9	橡皮筋小车	弹力 弹性形变 力 距离 能量转换 线性运动与圆周运动 重心 测试 记录与分析	该项目中学生将使用结构件与橡皮筋制作一辆以橡皮筋为动力的小车。通过本次课，学生将进一步了解 弹性形变，并了解橡皮筋车运动发生的能量转换。
10	遥控小车	微动开关 电机 正反转 电路连接 有线遥控 小车设计	该项目利用两个微动开关来控制电机正反转从而实现小车的前进与后退。通过本次课程，学生会学习到 微动开关的工作方式与作用，连接电路图实现对电机正反转的控制，制作一个可以有线遥控的小车。
11	液压机械臂	液压 气压 液压传动 机械臂 自由度 夹具设计 结构组装	该项目利用液压和气泵，制作一个可以控制的液压机械臂，通过该课程，学生可以了解到液压、气压的传动方式，并设计合适的 夹具抓取不同物品。
12	振动机器人	电路 平衡 偏心结构 电流 电压	该项目中学生通过观察电机结合偏心轮结构产生的振动现象，了解不同结构会产生不同的振动效果， 然后设计并制作一个振动机器人。

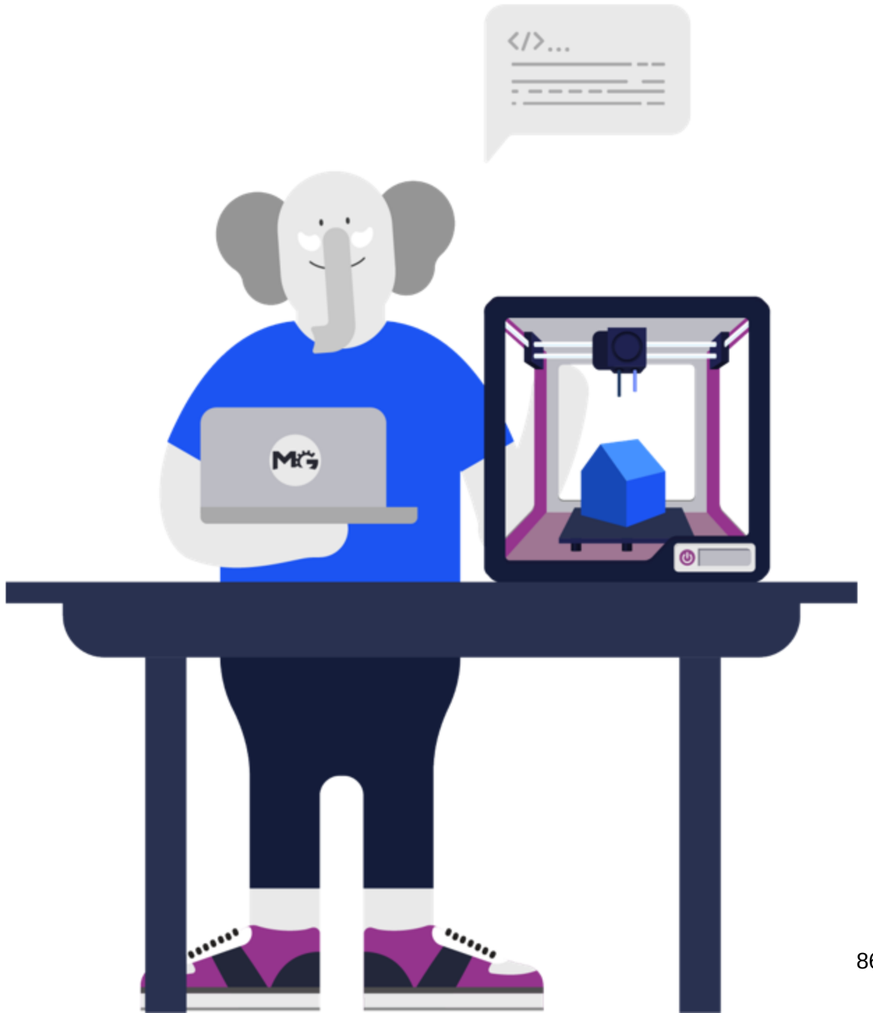
No.	Project Name	Key Words	Project Description
1	Wind-Powered Car	Electricity, Energy Conversion, Kinetic Energy, Recoil, Aerodynamics, Resistance, Testing, Efficiency, Energy	In this project, students will observe recoil phenomena in everyday life, analyze the forces involved in these phenomena, and based on their findings to design and build a wind-powered car using a simple circuit. Test the car to ensure it moves efficiently and design the car's appearance.
2	Track Challenge	Incline, Gravitational Potential Energy, Energy Conversion, Adjustment, Track, Distance, Testing, Height and Distance	In this project, students will build a ramp track for a ball to roll down and adjust the slope of the track. They will test how the distance the ball rolls changes with different slope angles, exploring the relationship between the slope and the rolling distance.
3	Wind Turbine Generator	Electricity, Energy Conversion, Force, Balance, Tilt Angle, Acceleration Stability, Testing, Efficiency, LED Voltage and Current	In this project, students will learn about the conversion of wind energy into electrical energy by building a wind turbine generator. Using recycled materials, they will create a wind turbine and design their own blades to achieve turbine-powered electricity. They will also measure the impact of blade angle and the distance from the fan on the output voltage using tools such as a multimeter, exploring factors like efficiency and energy conversion.
4	Ferris Wheel	Circuit, Balance, Gear Motor, Pulley, Pulley Transmission, Rotation, Force, Design and Construction	In this project, students will use a gear motor to drive a belt pulley, which in turn drives the "Ferris wheel" mounted on a hub. They will learn about the transmission characteristics of pulleys, connect a simple circuit, and build and test the Ferris wheel to ensure it remains balanced and operates effectively.
5	Belt Pulley Car	Belt Pulley, Gear Motor, Circuit Symbols, Circuit Connections, Car Design, Testing and Iteration	In this project, students will use a power source to drive a gear motor, which controls the car's wheel movement via a belt pulley transmission. Through this course, students will learn the symbols and functions of basic electronic components and master basic circuit connections. They will then explore the motion conversion in a belt pulley system and design and build an electric belt pulley car.
6	Ping Pong Ball Launcher	Friction, Friction Wheel, Exploration and Testing, Parallel Circuit, Circuit Principles, Circuit Diagram, Launcher	In this project, students will use a parallel circuit with two motors to drive a friction wheel, which will spin at high speed to launch a ping pong ball. Through this course, students will explore the factors that increase friction, learn the circuit principles behind the project, and attempt to draw a circuit diagram.
7	Bridge Design	Bridge, Triangle, Mirror Images, Tension, Load-Bearing, Stability, Testing, Structure	In this project, students will design and build a bridge using materials such as structural components, wooden sticks, and ropes, and then test its load-bearing capacity. Through this project, students will learn about different types of bridges, understand the stability of triangles, and explore methods to enhance the stability of the bridge structure.
8	Ball Shooting Machine	Elasticity, Elastic Deformation, Force, Distance, Testing, Recording and Analysis	In this project, students will explore the concepts of elastic deformation and elastic force. Using the elasticity of rubber bands and structural components, they will build a ball shooting machine. They will observe how the force applied to pull a wooden stick affects the distance the ball is launched and investigate the relationship between force and distance.
9	Rubber Band Car	Elasticity, Elastic Deformation, Force, Distance, Energy Conversion, Linear and Circular Motion, Center of Gravity, Testing, Recording and Analysis	In this project, students will use structural components and rubber bands to create a car powered by the energy stored in the rubber band. Through this course, students will deepen their understanding of elastic deformation and explore the energy conversion that occurs during the motion of the rubber band car.
10	Remote-Controlled Car	Micro Switch, Motor, Forward and Reverse Rotation, Circuit Connection, Wired Remote Control, Car Design	In this project, students will use two micro switches to control the forward and reverse rotation of a motor, allowing the car to move forward and backward. Through this course, students will learn how micro switches work and their function, connect a circuit to control the motor's direction, and create a car that can be controlled via a wired remote.
11	Hydraulic Robotic Arm	Hydraulics, Pneumatics, Hydraulic Transmission, Robotic Arm, Degree of Freedom, Gripper Design, Structural Assembly	In this project, students will use hydraulic and pneumatic pumps to build a controllable hydraulic robotic arm. Through this course, students will learn about hydraulic and pneumatic transmission methods, and design appropriate grippers to handle different objects.
12	Vibration Robot	Circuit, Balance, Eccentric Structure, Current, Voltage	In this project, students will observe the vibration phenomenon created by a motor combined with an eccentric wheel structure. They will learn how different structures produce different vibration effects. Students will then design and build a vibration robot, exploring the relationship between circuit design, balance, and the mechanical movement generated by the motor's vibrations.

科创营队项目课

Engineering Camp with Project-Based Learning Curriculum

在科创主题营队中，学生通过集中时间的学习，获得完整的工程设计项目体验，设计与制造生产力工具、自制机器人并进行比赛。

In the Engineering Camps, students can gain a complete engineering design experience through focused learning sessions. They will design and create productivity tools, build their own robots, and participate in competition.



科创教育

抓娃娃机设计营
Claw Machine Design Camp (age 6-8)

结构设计 Structural Design　外观设计 Aesthetic Design　电子电路 Electronic Circuits

“买玩具不如造玩具，创造比拥有更有趣。”外出时总是不自觉地被周边琳琅满目的抓娃娃机吸引，很想弄清楚背后的运作原理，操作时能够多抓几个娃娃，不如干脆自己造一台吧！从观察到拆解，学习运作原理，结合动手实践，实现抓娃娃机的各项功能。培养科学思维、提高解决问题的能力！

"Why buy toys when you can build them? Creating is more rewarding than owning!"Ever found yourself drawn to arcade claw machines, curious about how they work? Instead of just playing, why not build your own? From observation to hands-on construction, learn the mechanics behind these captivating games and bring a fully functional claw machine to life. Develop scientific thinking and sharpen your problem-solving skills along the way!

幼儿园 Kingdergarten　小学 Primary School

Link

扫码查看课程详情

科创教育

六足仿生机器人智造营
Hexapod Bionic Robot Engineering Camp

机器人搭建与操控 Robot Construction & Control

(age 10+)

编程 Programming

仿生设计 Bionic Design

从零搭建可适应复杂地形的六足仿生机器人，学习仿生学、机械结构、电路编程，实现步态控制与语音/遥控操作。学员还能自定义功能，如：发射装置、舞蹈编程等，从基础理论到实践操作，从探究学习到应用设计，一起解决问题、训练思维。

Build a terrain-adaptive hexapod bionic robot from scratch—master bionics, mechanical structures, and circuit programming to achieve gait control with voice/remote operation. Customize features (e.g., projectile launchers, dance routines) while progressing from theory to hands-on application, collaborative problem-solving, and critical thinking.

小学
Primary School

初中
Junior High School

Link

扫码查看课程详情

科创教育

FPV火星探测车智造营

Fpv Mars Rover Engineering Camp (age 7-9)

机器人搭建与操控 Robot Construction & Control

智能控制 Intelligent Control

FPV原理 FPV Principles

“人类可以成为跨星际物种”，一起成为太空工程师，设计与制造FPV火星探测车，穿越复杂的火星地形，搭载第一视角摄像头，观测周围环境；调研火星车“黑科技“，设计太阳能板装置；利用机械臂装置采集火星探测资源；和团队成员共同探讨，生成火星探测任务，并利用自主设计的火星车完成挑战。

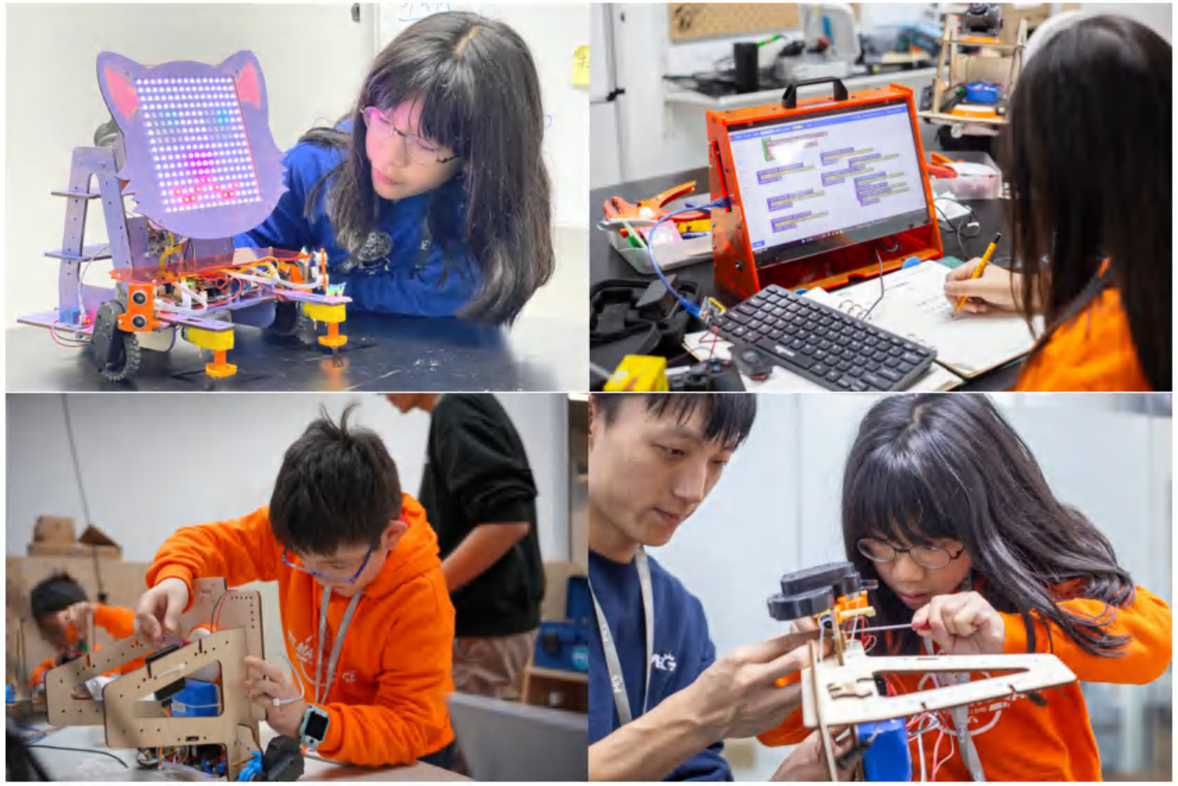
"Human beings can become an inter - stellar species." Become space engineers together, design and manufacture FPV (First - Person - View) Mars rovers, traverse the complex Martian terrain, be equipped with first - person - view cameras, and observe the surrounding environment; research the "black technologies" of Mars rovers, design solar panel devices; use robotic arm devices to collect Mars exploration resources; discuss with team members to generate Mars exploration tasks, and complete the challenges using self - designed Mars rovers.

Link

扫码查看课程详情

小学
Primary School

科创教育



智能服务机器人智造营
Intelligent Service Robot Engineering Camp

智能操控 Intelligent Control　编程 Programming　(age 7-9)

STT语音识别 STT Voice Recognition

学习者将从基础开始，搭建智能服务机器人：编程控制电机，实现机器人移动功能，结合语音控制模块，控制机器人响应指令；通过服务对象的用户洞察、对使用场景的分析，添加服务功能，例如通过继电器控制吸尘器、互动陪伴泡泡机、语音对话与表情显示等。一起智造服务机器人，服务他人、解决问题。

Design and Build Your Own Voice-Controlled Smart Robot,Starting from the fundamentals, learners will assemble an intelligent service robot: program motor controls for mobility, integrate voice recognition modules for command response, and enhance functionality through user research and scenario-based design—such as vacuum control via relays, interactive bubble-blowing companions, and voice-activated emotive displays. Let's engineer service robots together to assist people and solve real-world challenges.

Link

扫码查看课程详情

小学
Primary School

科创教育

海陆空三栖无人机设计营

Sea-Land-Air Reversibles Drone Design Camp (age 8-12)

开源硬件 Open-Source Hardware　智能智造 Intelligent Manufacture　编程 Coding

在营队中，学习者将从竹蜻蜓入手，学习飞行器原理，使用空心杯电机和主控板等电子元件。他们将在虚拟和现实环境中测试和练习，设计制造适应多种环境的无人机，并执行复杂任务。这一过程将加深学生对空气动力学、气垫船原理和四轴无人机操控的理解。

In the educational camp, learners can start with bamboo dragonflies to grasp the principles of flight, utilizing electronic components such as hollow cup motors and main control boards. They will test and practice in both virtual and real environments, designing and manufacturing drones suitable for various conditions, and carry out complex missions. This process will enhance students' understanding of aerodynamics, the principles of hovercrafts, and the operation of quadcopters.

小学 Primary School　初中 Junior High School

Link

扫码查看课程详情

科创教育

核芯战斗机器人设计营

Corebot Engineering Camp (age 5-7)

工程设计 Engineering Design　结构、电路、编程 Structure, Circuit, Coding

MG 机器人工程设计营以探究、学习、应用为导向，以高科技企业研发的机器人作为学生的兴趣引导，探究已有机器人功能实现背后的原理，分析其实现方法，转化与应用这些知识，设计与制造属于自己的机器人。

通过项目式的学习方式，完成从想法到物化实现的设计过程，每位营员设计并制造自己的机器人，再组队参与挑战赛。核芯战斗机器人设计营强调以实践范式培养学生的工程设计思维、科学思维和人本思维，培养学生成为未来的创造者和问题解决者。

This camp course is exploration, learning, and application-oriented. It uses robots developed by high-tech companies to spark students' interest. Students can investigate the principles behind the functions of existing robots, analyze how these functions are implemented, and apply this knowledge to design and build their own robots. Through project-based learning, students will experience the entire design process—from concept to realization. Each participant will design and create their own robot, then form teams to compete in challenges.
This camp course emphasizes a practical approach to developing students' engineering design thinking, scientific thinking, and human-centered thinking. The camp aims to cultivate students to become future creators and problem solvers.

幼儿园 Kingdergarten　小学 Primary School

Link
扫码查看课程详情

科创教育

格斗机器人设计营

Combat Bot Engineering Camp (age 7-12)

设计与迭代 Design and Iteration | 机器人 Robot | 编程 Coding

在MG格斗机器人营队中，孩子们将从一块开发板出发，通过结构设计与电气配合，设计出能够空中飞行操控、陆地近身格斗与水中完成任务的机器人，以最精简的方式探寻创意实现的最大可能性。名为格斗，但志不在格斗，在于实现功能和解决问题的过程中，对孩子们的工程设计能力、策略与反应能力、现场操控能力等综合能力的培养和考验。

In the Combat Bot Camp, children can start with a development board, through structural design and electrical integration, create robots capable of flying in the air, engaging in close combat on land, and completing tasks underwater. The goal is to explore the maximum potential of creativity through the most streamlined design possible.While the robot is called "combat bot," the focus is not on fighting others but on the process of developing functional robots and solving challenges. It is a test and training ground for children's engineering design abilities, strategic thinking, responsiveness, and hands-on control skills, fostering and challenging their overall capabilities in a fun and dynamic environment.

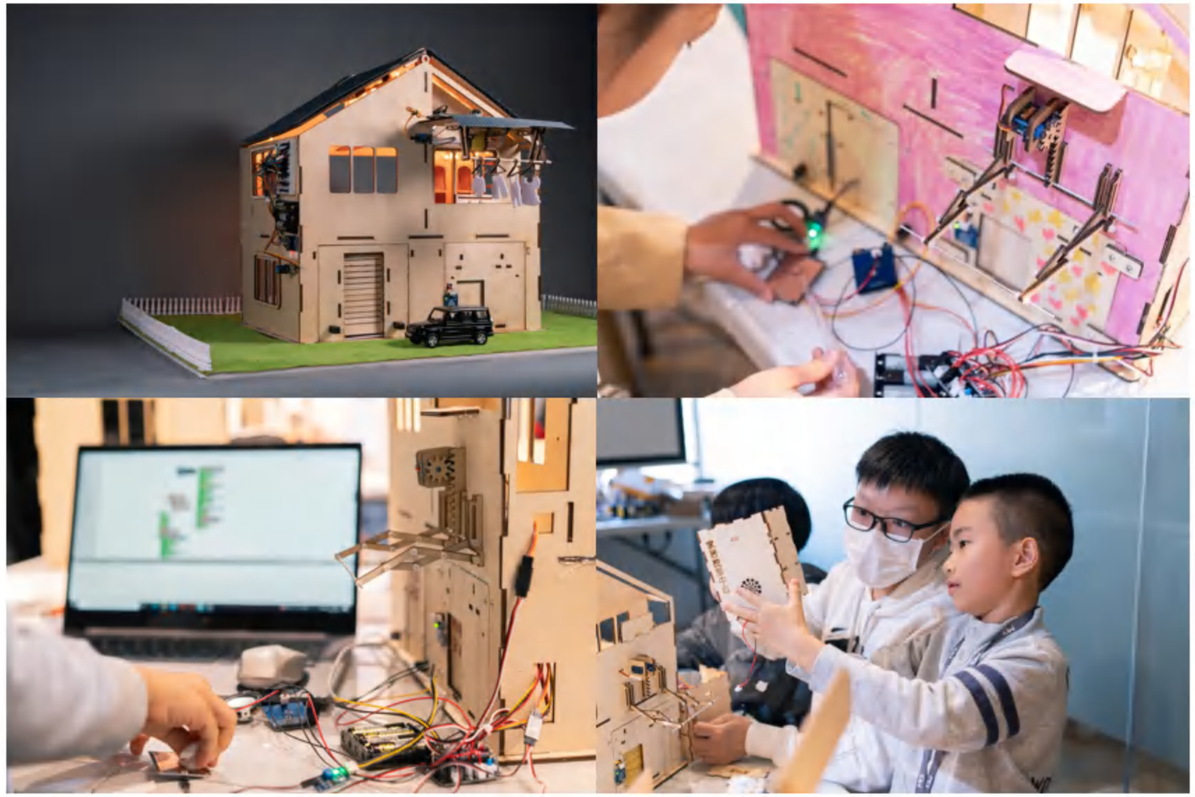
Link

扫码查看课程详情

小学 Primary School

初中 Junior High School

科创教育



智慧家居设计营

Smart Home Engineering Camp (age 8-12)

智慧家居 Smart Home　结构、电路、编程 Structure, Circuit, Coding

从绘制草图到完成整套智慧家居的功能设计，从独立的结构与模块到完成整体联动，小工程师们将以工程设计的视角形成一套专属的智慧家居解决方案。在营队中，你要思考居住空间的功能与分区，尝试更为合理的家居布局；学习家庭电路的设计方式以及安全用电常识；学习编程语句与逻辑结构，实现家居的智能联动。一起开始这场充满挑战的设计之旅吧！

From sketching ideas to completing the full functionality design of a smart home, from individual structures and modules to integrated systems, young engineers can develop their own tailored smart home solutions from an engineering design perspective. In this camp, you will think about the functions and zoning of living spaces, exploring more efficient home layouts; learn how to design household circuits and understand electrical safety; study programming syntax and logic structures to enable smart home automation. Let's embark on this challenging design journey together!

幼儿园 Kingdergarten　小学 Primary School

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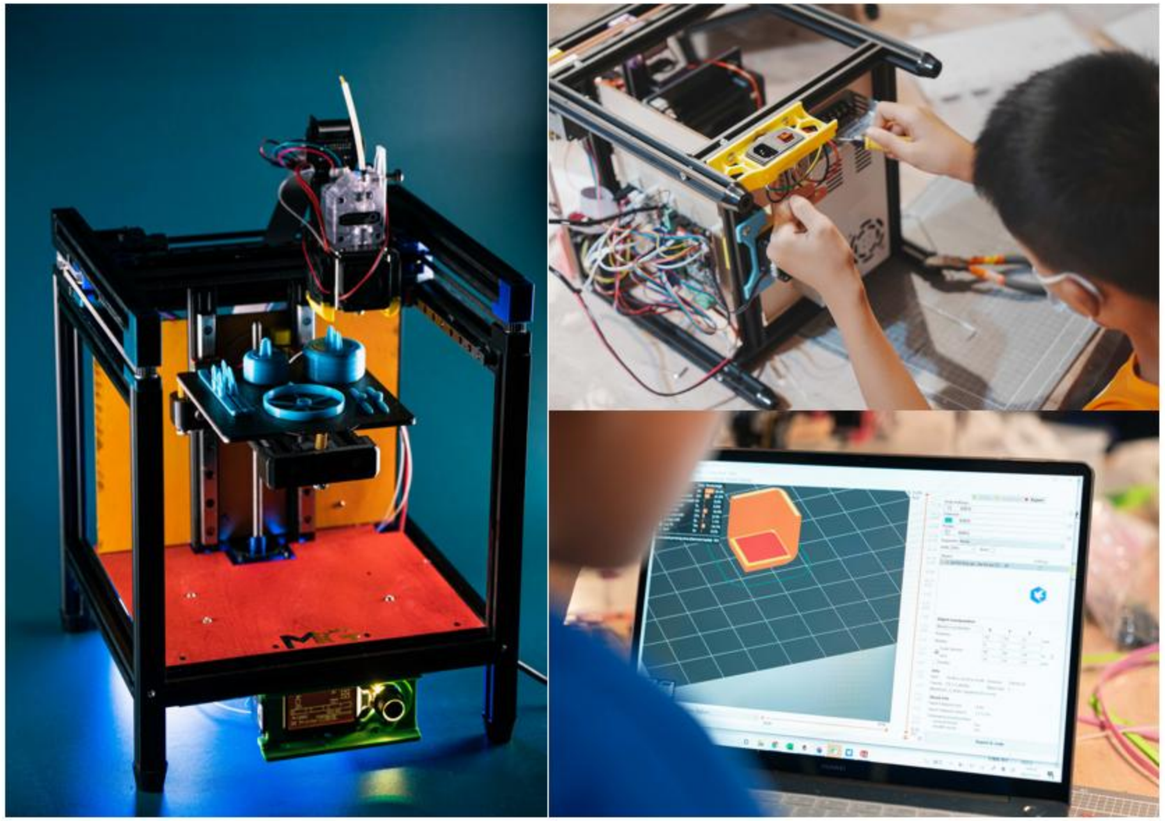

3D打印机智造营

3D Printer Engineering Camp (age 8+)

工业母机 Machine Tool　智能智造 Intelligent Manufacture

DIY一台3D打印机是一件有趣的事情，深入理解现代数字化加工生产技术的本质，经历完整的工程设计流程，基于项目、基于设计，从更本质的层面理解3D打印技术，经历工程设计过程中的取舍、决策、成功与失败等，学会让技术更好地为自己的创意与想法实现服务。

DIY a 3D printer is an exciting endeavor that allows you to deeply understand the essence of modern digital manufacturing technologies. You can go through the complete engineering design process, working on a project-based approach to design, gaining a fundamental understanding of 3D printing technology. Throughout this journey, you'll experience the trade-offs, decision-making, successes, and failures that come with engineering design, and learn how to harness technology to better serve your own creative ideas and concepts.

小学 Primary School　初中 Junior High School

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科创教育

滑板车智造营

Scooter Engineering Camp (age 5-7)

模型设计 Model Design　结构设计 Structure Design　外观设计 Appearance Design

“买玩具不如造玩具”，MG滑板车智造营中，学员们从零开始设计与智造一辆滑板车，以设计师的身份和视角出发，发挥想象力结合约束条件与落地可行性。从梳理思路开始，自己处理所需的木板结构材料，学习滑板车的结构与原理，合理应用工具进行结构装配，再进行调试与迭代。完成滑板车主体后，根据自身情况进行功能设计与外观优化。最后完全安全驾驶培训与驾驶技能测试后，就可以滑着自制的滑板车出发啦！

"Why buy toys when you can make your own?" In the MG Scooter Engineering Camp, students can start from scratch to design and create their own scooters. Adopting the mindset and perspective of a designer, students will unleash their imagination while considering constraints and practical feasibility.

The process begins with organizing ideas, then sourcing and preparing the necessary wooden materials for the structure. Students will learn the principles behind scooter design, apply the right tools for structural assembly, and go through the process of testing and iteration. Once the main structure is completed, students will focus on functional design and appearance optimization based on their individual needs. Finally, after completing safety training and passing driving skill tests, students will be ready to ride their custom-built scooters!

幼儿园 Kingdergarten

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科创教育

服务电动车智造营
Service Electromobile Engineering Camp

电子电路 Electronic and Circuit　结构设计 Structure Design　(age 6-9)

自造一台轻便环保的服务电动载人工具，利用拓展接口还可以叠加其他功能项。在营队中，你将学习和了解电动车的基本原理、构造和制造过程并学习如何选择车架材质、电机功率、电池容量等重要因素，使用各类工具智造电动车。在主体结构的基础上，还能够拓展哪些功能，就看你的创想啦!

DIY a lightweight, eco-friendly electricmobile and expand its functionality by using the expansion interface. Throughout the program, you can learn the basic principles, construction, and manufacturing processes of electricmobile. You'll gain hands-on experience in selecting key components, such as frame materials, motor power, and battery capacity, and use a variety of tools to assemble the electricmobile. Building on the main structure, you'll also have the opportunity to expand the electricmobile's functionality—how far you can push the design depends on your creativity and innovation!

幼儿园 Kingdergarten　小学 Primary School

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科创教育

载人后驱车设计营
Go-Kart Engineering Camp (age 10+)

电子电路 Electronic and Circuit　结构设计 Structure Design　编程 Coding

造一辆可以载人、电力驱动的车！在营队中，营员们会系统学习汽车知识，发展史、汽车结构、汽车运转原理（驱动、转向、刹车）；学习电路控制原理，完成电路的搭建和布局，通过编程实现声音控制、实现倒车雷达的功能。在这几天中，你就是一名汽车工程师，自己掌控整体开发过程，为你交付的成果负责。

Let's build a electric-driven go-cart that can carry people! In this camp, participants will systematically learn about automobiles, including their history, structure, and operating principles (drive, steering, braking). You will also dive into circuit control principles, setting up and arranging circuits, and using programming to enable features such as sound control and reverse radar. Over the course of the camp, you will take on the role of an automotive engineer, managing the entire development process and taking responsibility for the final outcome.

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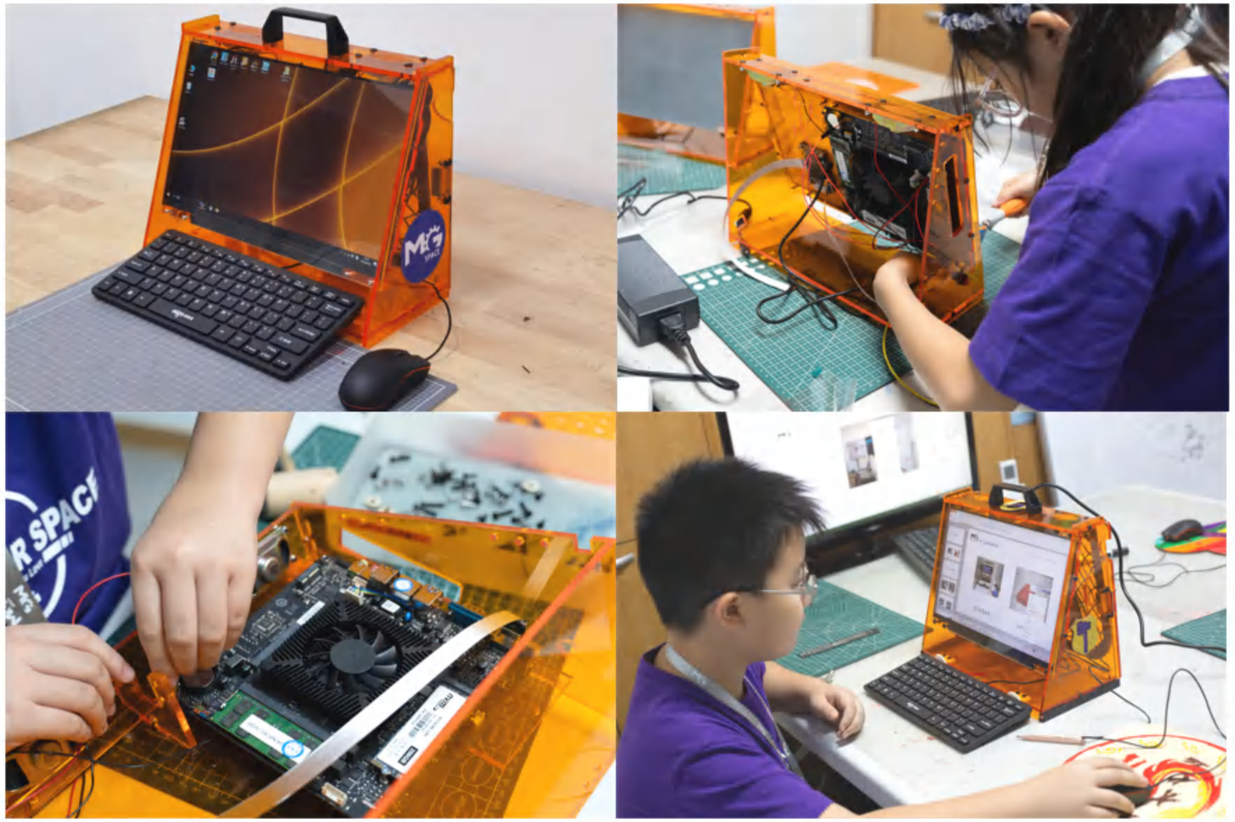

迷你电脑智造营

Mini Computer Engineering Camp (age 8+)

开源硬件 Open-Source Hardware　智能智造 Intelligent Manufacture　编程 Coding

自己造电脑，一起学编程！一起探究技术背后的技术，学习计算机的组成、溯源计算机背后的运作机理，搭建一台属于自己的迷你电脑，使用自制电脑完成软硬件相结合的编程学习，完成编程大挑战。

Build your own computer, learn programming together!Let's explore the technology behind technology, learn about the components of a computer and uncover the underlying mechanisms that make computers work. You'll build your own mini computer and dive into a hands-on experience of combining hardware and software. Using your custom-built computer, you'll engage in programming lessons and take on coding challenges.

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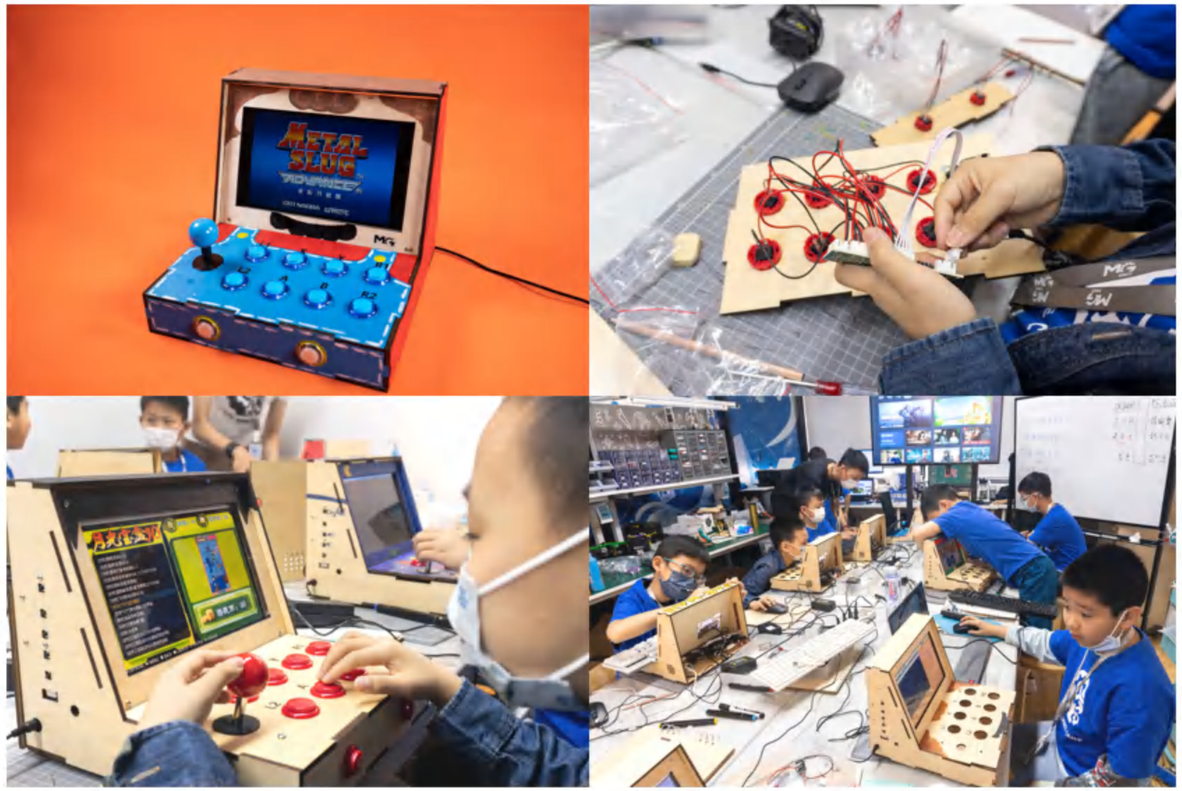

DIY街机游戏机智造营
Arcade Game Machine Engineering Camp

开源硬件 Open-Source Hardware | 游戏机 Game Machine | 编程 Coding (age 8+)

DIY街机游戏机营队中，营员们会利用香橙派主控板、显示器、以及其他电子电路元器件来连接电路，并绘制机器结构，完成一台DIY街机游戏机。该机器搭载Linux操作系统，在两天的营队期间，营员们不仅可以体验到电脑底层的命令行交互方式，还能够自行选择安装喜欢的游戏，与家人朋友一起分享。

In this camp course, participants can use an Orange Pi mainboard, display monitor, and various electronic components to connect circuits and design the machine's structure, ultimately building their own DIY arcade game machine. The machine runs on a Linux operating system, and during the two-day camp, participants will not only experience command-line interactions at the computer's core level but also have the opportunity to choose and install their favorite games that can share with family and friends.

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麦高创想家文化教育科技(深圳)有限公司

Mago Imagineer Scientific and Technological Education(Shenzhen)Co.,Ltd.

广东省深圳市南山区招商街道太子路18号海景广场3E-1

3E-1 Seaview Plaza, No.18 Taizi Road , Nanshan District ,Shenzhen City, Guangdong Province

www.mgspace.net

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